

International Conference on Process Mining (ICPM 2019)
International Conference on Application and Theory of Petri Nets (PN 2019)
International Conference on Application of Concurrency to System Design (ACSD 2019)

June 23-28 2019, Aachen, Germany

Program Booklet ICPM / PN / ACSD



Foreword from the General Chair

Welcome to the first International Conference on Process Mining (ICPM 2019), the 40th International Conference on Application and Theory of Petri Nets and Concurrency (PN 2019), and the 19th International Conference on Application of Concurrency to System Design (ACSD 2019). We are very proud to be able to host these conferences in the beautiful city of Aachen. The conferences take place in the Tivoli football stadium close to the city center of Aachen. This beautiful venue provides a unique atmosphere with great views and excellent conference facilities. All three conferences focus on processes from different angles. Co-locating them allows for cross-fertilization between the more data-driven process mining community and the more model-driven Petri net and ACSD community.

ICPM 2019 is the first vendor-neutral academic process mining conference, and we are overwhelmed by the huge interest in this inaugural conference. Hundreds of process mining enthusiasts meet in Aachen, including the top researchers in the field and the leading process-mining practitioners and vendors.

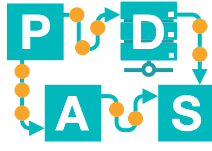
The Petri net conference is celebrating its 40th edition and includes a special event to reflect on half a century of Petri net research. It is nice to collocate the new ICPM conference with one of the oldest conferences in computer science.

I would like to use this opportunity to thank the members of the Process and Data Science (PADS) group at RWTH Aachen University for helping to organize this event. Thanks to all authors, presenters, reviewers, program committee members, and participants. Special thanks go to the program chairs of the three conferences. We also thank our generous sponsors that made this event possible: Celonis, Deloitte, ProcessGold, TimePi, SAP, myInvenio, Fluxicon, Everflow, Minit, PuzzleData, PAFnow, Software AG, StereoLOGIC, BrightCape, Logpickr, Mehrwerk, QPR, KPMG, LanaLabs, Wintec, RWTH, Fraunhofer FIT, Gartner, Alexander von Humboldt Foundation (AvH), Deutsche Forschungsgemeinschaft (DFG), SSON, FernUniversität Hagen, IEEE, and Springer.



Wil van der Aalst
General Chair of ICPM 2019, Petri nets 2019, and ACSD 2019
June, 2019

Program at a glance - TIVOLI - Business and Event location



Chair of Process and Data Science



	Monday, June 24		Tuesday, June 25		Wednesday, June 26		Thursday, June 27		Friday, June 28	
	Petri Nets (WS&T) Sky Lounge 1	ICPM Club Lounge 1	Petri Nets (WS&T) Sky Lounge 1	ICPM/Industry Day Club Lounge 1	Petri Nets Press Conf.	ICPM Club Lounge 1	Petri Nets Club Lounge 1	ACSD Press Conf.	Petri Nets Club Lounge 1	
09:00 - 10:30	PN Course Lars Kristensen	PNSE '19 Moldt, Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Ekkart Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst
			ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Ekkart Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst
10:30 - 11:00										
11:00 - 12:30	PN Course Lars Kristensen	PNSE '19 Moldt, Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Ekkart Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst
12:30 - 13:30										
13:30 - 15:00	PN Course Serge Haddad	PNSE '19 Moldt, Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Ekkart Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst
15:00 - 15:30										
15:30 - 17:00	PN Course Serge Haddad	PNSE '19 Moldt, Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Karsten Wolf	ATAED '19 Bergenthum, Carmona, van der Aalst	Tutorial Ekkart Kindler	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst	ATAED '19 Bergenthum, Carmona, van der Aalst
17:00 - 18:30										
18:30 - 19:30										
19:30 - 23:30										

09:00 - 10:00 Invited Talk Dirk Fahland
10:00 - 10:30 Open Nets
09:00 - 10:00 Opening Jörg Keller
Invited Talk Philippas Tsigas
10:00 - 10:30 Stochastic Models Arbitration
9:00 - 9:15 Opening by General Chair and PC chairs
09:15 - 10:15 CAP Lecture Luca Cardelli
09:00 - 09:10 Opening Wil van der Aalst
09:10 - 09:30 Marc Kerremans (Gartner)
09:30 - 10:00 Julian Leberz (Deloitte)
10:00 - 10:30 Marc Gittler, Patrick Greifzu (DHL)
11:00 - 11:30 Piergiorgio Grossi (Credem Banca)
11:30 - 12:00 Carsten Schöne (Merck)
12:00 - 12:30 Tool demo teasers
13:30 - 14:00 Michael Wiese (Ernst & Young)
14:00 - 14:30 Bart Prudon (Medtronic)
14:30 - 15:00 David Whyte (Canadian Financial Services)
15:30 - 16:00 Gia-Thi Nguyen (Siemens)
16:00 - 16:30 Sudhendu Rai (AIG investments)
16:30 - 17:15 Panel on the future of process mining
17:15 - 18:00 Get-Together
18:30 - 01:00 After Party in Aposto Aachen separate registration (organized by Celonis)
17:15 - 18:15 Break
17:15 - 18:15 Tool Demo Fair
18:30 - 20:00 IEEE Task Force on Process Mining (open to all)
19:30 Sightseeing tour Aachen (Tourist Info Eisenbrunnen)
19:30 Dinner Kurparkterrassen (Dammstraße 40, Aachen)
16:30-17:00 Coffee Break
17:00-18:00 Session 3
Transfer by bus
Dinner Zur Abtei invited guests only (Kornelimünster)

RWTH	Sunday, June 23	
	Petri Nets	ICPM
	B-it / 5053-1	B-it / 5053-2a
09:00 - 10:30	PN Course Jörg Desel	
10:30 - 11:00	Coffee Break	
11:00 - 12:30	PN Course Jörg Desel	ICPM Doctoral Consortium
12:30 - 13:30	Lunch Break	
13:30 - 15:00	PN Course Lars Kristensen	ICPM Doctoral Consortium
15:00 - 15:30	Coffee Break	
15:30 - 17:00	PN Course Lars Kristensen	ICPM Doctoral Consortium

Conference Venue (only on Sunday, June 23, 2019, 09:00 - 17:00)

RWTH Informatik Center

Arrival by train and bus

Aachen is one of the main railway transportation hubs in Germany, reachable with IC/ EC, ICE and Thalys trains. Hence, Aachen can be reached from the major European cities in a relatively short time. From the railway station „Aachen West“ the RWTH Informatik Center is in walking distance (12-minute walk). When arriving at „Aachen Hauptbahnhof“ there are three possibilities: (1) take the train to „Aachen West“, (2) take a bus from „Aachen Hauptbahnhof“ to the center, or (3) walk into the center and take a bus there (e.g., Bus 23 from Aachen Eisenbrunnen to the stop Halifaxstraße or Bus 33 from Aachen Bushof to the stop Halifaxstraße).

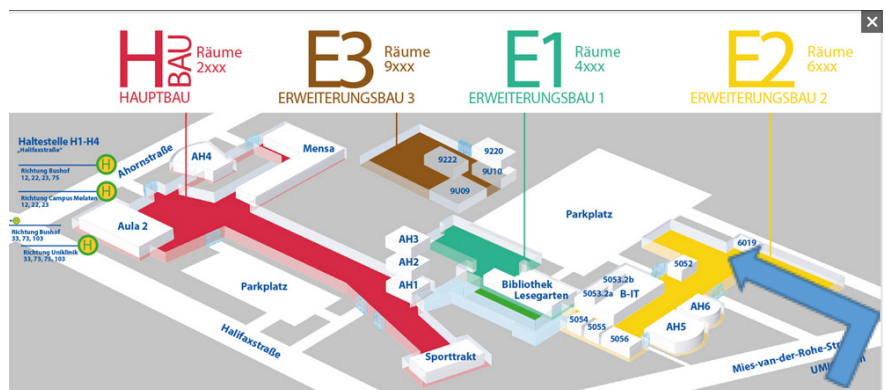
It is best to use <http://auskunft.avv.de> and <http://reiseauskunft.bahn.de> for directions if you are not traveling to „Aachen West“ (from where the conference site is in walking distance). Two example routes are: Bus 51 from Hauptbahnhof to Aachen Bushof followed by Bus 33 from Bushof to Halifaxstraße, and Bus 11 from Hauptbahnhof to Eisenbrunnen followed by Bus 23 from Eisenbrunnen to Halifaxstraße (takes 30 minutes). Walking from the center takes 30 minutes, from Hauptbahnhof approx. 40 minutes.

Arrival by car

The official address of RWTH Informatik Center is Ahornstraße 55. When using a navigation system it is better to use Mies-van-der-Rohe-Straße 39, Aachen. Note that the RWTH Informatik Center borders three streets: Halifaxstraße, Ahornstraße, Mies-van-der-Rohe-Straße.



The Chair of Computer Science 9 is located in the RWTH Informatik Center „auf der Hörn“. The easiest way to find us is via the back entrance of the building on Mies-van-der-Rohe-Straße (opposite number 39). The entrance is opposite house number 39 behind the fountain. The DC and PN course takes places in the so-called B-it rooms (ground level of Building E2, rooms 5053.1 and 5053.2a). (See map.)



Business and Event location Tivoli (Monday-Friday)

Krefelderstraße 205, 52070 Aachen

Arrival by train or bus

Aachen is one of the main railway transportation hubs in Germany, reachable with IC/ EC, ICE and Thalys trains. Hence, Aachen can be reached from the major European cities in a relatively short time.

From the central train station the Tivoli is accessible using the lines 11, 14 and 44 to Aachen Bushof and from there line 51 towards „Alsdorf/Baesweiler“. Exit at the stop „Sportpark Soers“. Also, use Bus 51 from Aachen Bushof to Sportpark Soers when staying in Aachen center. Use <http://auskunft.avv.de> or <http://reiseauskunft.bahn.de> for directions.

The entrance to Tivoli Business & Event Area is at the back of the stadium. On workdays, the buses run at 10-minute intervals.

Arrival by car

Your navigational system will find our the stadium using the following address: Krefelder Str. 205, 52070 Aachen. Visitors without a navigational system should follow the signs “Tivoli – Sportpark Soers”. You can use the APAG parking garage behind the stadium.

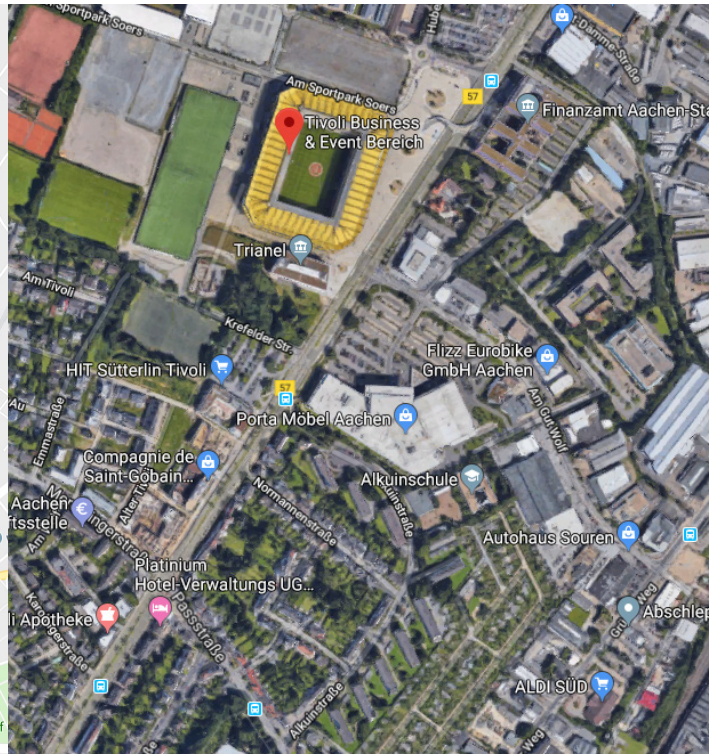


Aachen, Aachen, Sportpark Soers

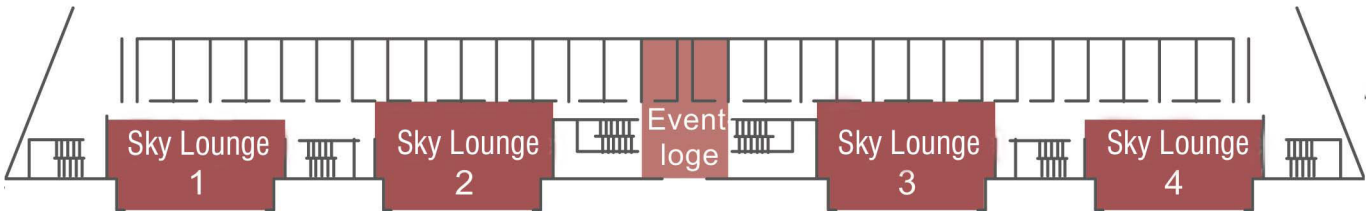


Business and Event location Tivoli (Monday-Friday)

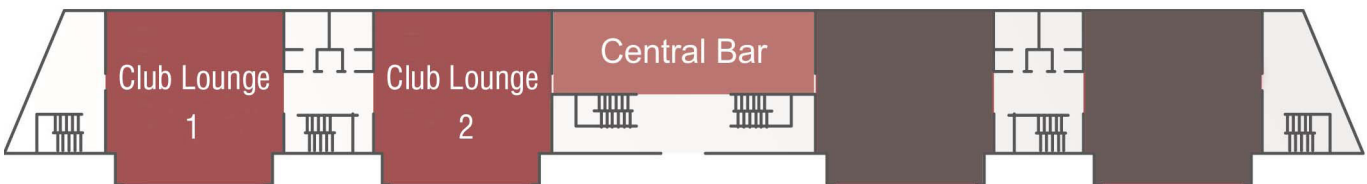
Krefelderstraße 205, 52070 Aachen



Tivoli Ebene 3



Tivoli Ebene 2



Rooms

The above map shows the conference rooms at levels 2 and 3. At the entrance level, there is an additional room called the „Press Conference Room“ used for the workshops on Monday and Tuesday, the Petri net conference on Wednesday, and the ACS D conference on Thursday. Club Lounge 2 will be used for coffee breaks, lunches, etc.

Registration Desk (ICPM/PN/ACSD)

Please wear your badge at all times. You can only attend the conferences/workshops/tutorials on days that you have registered. However, you are free to attend different events on the same day. Collect your badge and conference bags at the following times.

8.30-12.00 Sunday (RWTH Informatik Center)

8.00-16.00 Monday (Tivoli)

8.00-16.00 Tuesday (Tivoli)

8.30-16.00 Wednesday (Tivoli)

8.30-13.00 Thursday (Tivoli)

8.30-13.00 Friday (Tivoli)

For the social events, names will be checked at the entrance. Also bring your badge, to avoid causing delays.



Program

1st International Conference on Process Mining



SUNDAY, JUNE 23, 2019 - RWTH PADS

Doctoral Consortium ICPM 2019

The Doctoral Consortium runs from 10:30 until 17:00 on Sunday, June 23rd at the RWTH Informatik Center, Ahornstr. 55, Aachen, B-it room 5053.2a (see directions).

The ICPM Doctoral Consortium aims to provide PhD students feedback on students' research methods and plans. The following PhD proposals have been accepted to be presented at the Doctoral Consortium.

- Amin Yazdi – Enabling Operational Support in the Research Data Life cycle
- Jongchan Kim – Enhancing the quality of predictions in predictive business process monitoring
- Niyi Ogunbiyi and Artie Basukosk – A Context-Aware Process Monitoring Predictive Model
- Julio Cesar Carrasquel – Formal Modelling and Validation of Stock Trading Systems Behavior: A Petri Net Approach
- Ruud van Cruchten, Hans Weigand and Eddy Vaassen – Data Quality in Process Mining: A rule-based approach
- Rashid Zaman and Marwan Hassani – Process Mining Meets GDPR Compliance: The Right to be Forgotten as a Use Case

Boudewijn van Dongen will chair the Doctoral Consortium.

Schedule:

10:30-11:00 coffee

11:00-12:30 Presentations of the 6 PhD proposals (no questions yet, write them down for after the break)

12:30-13:30 lunch

13:30-15:00 Questions and answers / feedback to the PhD candidates (+/- 20 minutes per candidate)

15:00-15:30 coffee

15:30-17:00 Questions and answers / feedback to the PhD candidates (+/- 20 minutes per candidate)

The doctoral Consortium Jury consists of Claudio Di Ciccio, Jan Claes, Benoit Depaire, Boudewijn van Dongen, Marcello La Rosa, and Jorge Munoz-Gama. RWTH Informatik, Ahornstr. 55, Aachen, B-it room 5053.2a.

Program

1st International Conference on Process Mining



MONDAY, June 24, 2019 - ROOM - CLUB LOUNGE 1

(Research Day 1)

OPENING & KEYNOTE 09:00 - 10:30

Opening by the General Chair and PC Chairs

Keynote: Wil van der Aalst - 20 Years of Process Mining Research – Accomplishments, Challenges, and Open Problems

DATA PRE-PROCESSING 11:00 - 12:30

(Session Chair: Massimiliano de Leoni)

Stephan A. Fahrenkrog-Petersen, Han van der Aa and Matthias Weidlich - PRETSA: Event Log Sanitization for Privacy-aware Process Discovery

Sim Sunghyun, Bae Hyerim and Choi Yulim - Likelihood-based Multiple Imputation by Event Chain Methodology for Repair of Imperfect Event Logs with Missing Data

Pieter De Koninck and Jochen De Weerd - Scalable Mixed-Paradigm Trace Clustering using Super-Instances

AUTOMATED PROCESS DISCOVERY 13:30 - 15:00

(Session Chair: Dirk Fahland)

Sander J.J. Leemans, Erik Poppe and Moe T. Wynn - Directly Follows-Based Process Mining: Exploration & a Case Study

Roe Shraga, Avigdor Gal, Dafna Schumacher, Arik Senderovich and Matthias Weidlich - Inductive Context-aware Process Discovery

Robin Bergenthum - Prime Miner – Process Discovery using Prime Event Structures

PROCESS MINING APPLICATIONS 15:30 - 17:00

(Session Chair: Artem Polyvyanyy)

Felix Mannhardt, Petter Arnesen and Andreas Dypvik Landmark - Estimating the Impact of Incidents on Process Delay

Souad Ramadan, Halim Ibrahim Baqapuri, Erik Roecher and Klaus Mathiak - Process mining of logged gaming behavior during functional magnetic resonance imaging

João Caldeira, Fernando Brito E Abreu, José Reis and Jorge Cardoso - Assessing Software Development Teams' Efficiency using Process Mining

INVITED TUTORIAL 17:15 - 18:15

(Session Chair: Moe Wynn)

Avigdor Gal, Matthias Weidlich - Online Temporal Analysis of Complex Systems Using IoT Data Sensing

Opening Keynote

Wil van der Aalst (RWTH Aachen University)

Chair of Process and Data Science | RWTH Aachen University, Aachen, Germany



Short biography:

Prof.dr.ir. Wil van der Aalst is a full professor at RWTH Aachen University leading the Process and Data Science (PADS) group. He is also part-time affiliated with the Fraunhofer Institut für Angewandte Informationstechnik (FIT) where he leads FIT's Process Mining group. His research interests include process mining, Petri nets, business process management, workflow management, process modeling, and process analysis. Wil van der Aalst has published over 200 journal papers, 20 books (as author or editor), 450 refereed conference/workshop publications, and 65 book chapters. Next to serving on the editorial boards of over ten scientific journals, he is also playing an advisory role for several companies, including Fluxicon, Celonis, Processgold, and Bright Cape. Van der Aalst received honorary degrees from the Moscow Higher School of Economics (Prof. h.c.), Tsinghua University, and Hasselt University (Dr. h.c.). He is also an elected member of the Royal Netherlands Academy of Arts and Sciences, the Royal Holland Society of Sciences and Humanities, and the Academy of Europe. In 2018, he was awarded an Alexander-von-Humboldt Professorship.

20 Years of Process Mining Research – Accomplishments, Challenges, and Open Problems

In 1999, I started to actively work on process mining, because I noted that the process models used for simulation studies and workflow implementations often turned out to be very different from the actual processes. Therefore, it seemed to be good to start from event data rather than hand-made models. Moreover, the problem of learning end-to-end processes from example behavior seemed very interesting from a scientific point of view. This keynote for the first international process mining conference (ICPM 2019) reflects on the developments of the field over the last two decades. Process mining has been applied in thousands of organizations, there are dozens for software vendors offering process mining tools, and it has become a standard tool for auditing, management, process improvement, and consultancy. Despite the success and value of process mining, many of the original problems have not been solved satisfactorily from a scientific point of view. Discovered process models tend to be underfitting and there is no consensus on how to measure this (precision). The filtered directly-follows graph is surprisingly effective, but does not capture concurrency well. Finding the root cause of compliance and performance problems is still not supported well. All of these problems have been raised over 15 years ago, but remain open, despite the remarkable progress in process mining. Given the importance of these challenges, it is great that the ICPM conference series has been established. This keynote will reflect on accomplishments and challenges, and discuss some of the most important open problems in process mining.

Forum M Reception Dinner

Monday, June 24, 2019, 19:30 - 23:30

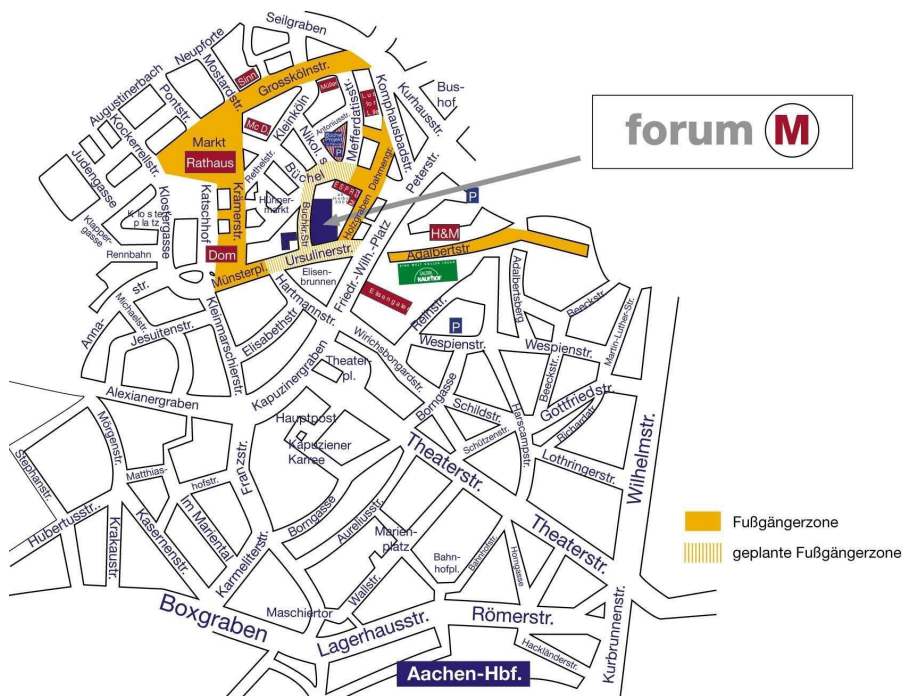


The Reception Dinner on Monday starts at 19:30 and takes place in Forum M (Buchkremerstraße 1-7, 52062 Aachen). Forum M is on the top floor of Mayersche Buchhandlung Aachen in the center of the city (close to the Cathedral and next to the Eisenbrunnen). Forum M offer views over the city.

During the Reception dinner, the ICPM awards will be handed out.

How to find Forum M?

When walking from the Dom (Cathedral) towards the Eisenbrunnen, you will see Forum M on the left (Buchkremerstraße 1-7). From Aachen Bushof (reached using Bus 51) head southeast on Kurhausstraße, slight right to stay on Kurhausstraße, turn right onto Peterstraße, turn right onto Ursulinerstraße, slight right onto Buchkremerstraße. Forum M will be on the right. Take the elevator to the top floor (follow signs).



Program

1st International Conference on Process Mining



TUESDAY, June 25, 2019 - Room - Club Lounge 1

(ICPM Industry Day)

SESSION 1 09:00 - 10:30

(Session Chair: Wil van der Aalst)

09:00-09:10 Opening by [Wil van der Aalst \(RWTH / Fraunhofer\)](#)

09:10-09:30 Process Mining in the Era of the Digital Twin of an Organization by [Marc Kerremans \(Gartner\)](#)

09:30-10:00 Process Mining at Scale – the plea for a technical Process Mining reference model by [Julian Lebherz \(Deloitte\)](#)

10:00-10:30 How to add Process Mining to the Auditor's toolbox by [Marc Gittler and Patrick Greifzu \(DHL\)](#)

SESSION 2 11:00 - 12:30

(Session Chair: Marc Kerremans)

11:00-11:30 Credem Digital Transformation with DTO and Process Mining by [Piergiorgio Grossi \(Credem Banca\)](#)

11:30-12:00 Entrepreneurial behavior in a DAX company. Can Process Mining be established bottom up only? by [Carsten Schöne \(Merck\)](#)

12:00-12:30 (Session Chair: [Bas van Zelst](#)) Tool demo teasers

SESSION 3 13:30 - 15:00

(Session Chair: Marc Kerremans)

13:30-14:00 Opportunities and challenges applying Process Mining in financial audits by [Michael Wiese \(Ernst & Young\)](#)

14:00-14:30 Process Mining at Medtronic – Our success formula to enable business value by [Bart Prudon \(Medtronic\)](#)

14:30-15:00 Practical implementation of process mining at large North American financial services enterprises by [David Whyte \(Canadian Financial Services\)](#)

SESSION 4 15:30 - 16:30

(Session Chair: Wil van der Aalst)

15:30-16:00 Unlocking Digital Transformation – the Human Touch by [Gia-Thi Nguyen \(Siemens\)](#)

16:00-16:30 Process Wind Tunnel for Improving Business Processes [Sudhendu Rai \(AIG Investments\)](#)

PANEL SESSION 16:30 - 17:15

Chaired by [Marc Kerremans \(Gartner\)](#) and [Wil van der Aalst \(RWTH Aachen and Fraunhofer FIT\)](#). Panelists: [Alexander Rinke \(Celonis\)](#), [Anne Rozinat \(Fluxicon\)](#), [Christiaan Esmeijer \(ProcessGold\)](#), [Elham Ramezani \(KPMG\)](#), [Fabrice Baranski \(Logpickr\)](#), [Gia-Thi Nguyen \(Siemens\)](#), [Julian Krumeich \(Software AG\)](#), [Kleber Stroeh \(EverFlow\)](#), [Marc Gittler \(DHL\)](#), [Massimiliano Delsante \(Cognitive Technology\)](#), [Michael Wiese \(Ernst & Young\)](#), [Julian Lebherz \(Deloitte\)](#), [Rasto Hlavac \(Minit\)](#), [Sofia Passova \(StereoLOGIC\)](#), [Teemu Letho \(QPR Software\)](#), [Thijs van de Weijer \(Bright Cape\)](#), [Thomas Baier \(Lana Labs\)](#), and [Tobias Rother \(Process Analytics Factory\)](#).

GET-TOGETHER 17:15 - 18:00

AFTER PARTY (ORGANIZED BY CELONIS) see separate page



Panel on the future of process mining

Tuesday, June 25th, 2019, 16:30 - 17:15 - ROOM - CLUB - LOUNGE 1

The panel of the future of process mining, chaired by Marc Karremans (Gartner) and Wil van der Aalst (RWTH Aachen and Fraunhofer FIT), includes a range of true experts in the field of process mining:

Alexander Rinke (Celonis)
Anne Rozinat (Fluxicon)
Christiaan Esmeijer (ProcessGold)
Elham Ramezani (KPMG)
Fabrice Baranski (Logpickr)
Gia-Thi Nguyen (Siemens)
Julian Krumeich (Software AG)
Julian Lebherz (Deloitte)
Kleber Stroeh (EverFlow)

Marc Gittler (DHL)
Massimiliano Delsante (Cognitive Technology)
Michael Wiese (Ernst & Young)
Rasto Hlavac (Minit)
Sofia Passova (StereoLOGIC)
Teemu Letho (QPR Software)
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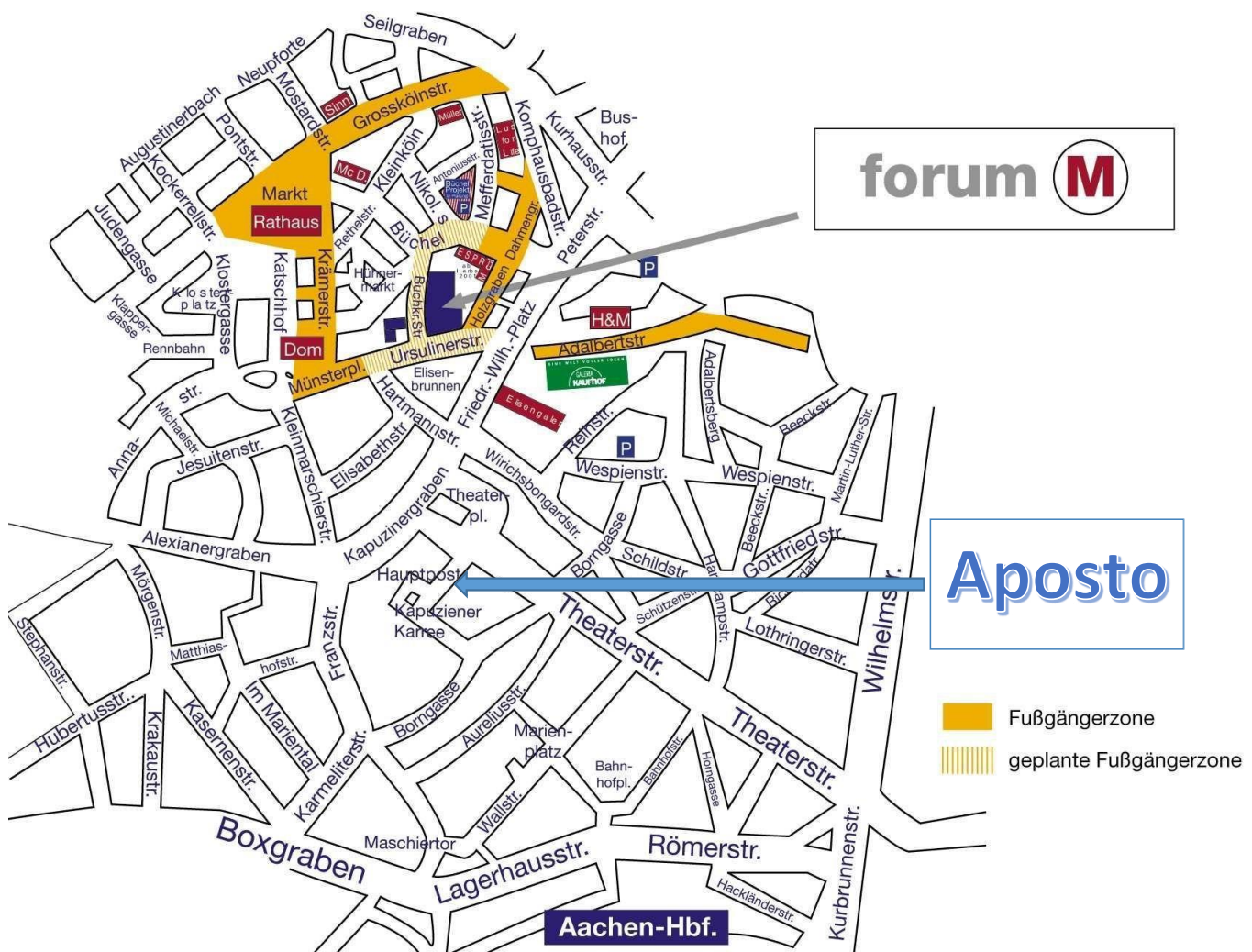
These eminent panelists represent large process mining users, software vendors, and analysts. Many of them have witnessed and contributed to the uptake of process mining. They will be asked to take a stand on provocative statements such as: „I’m looking forward to the next AI winter“, „Process mining be should part of any Six Sigma Black Belt training program“, „Process Mining has no future without better data integration“, „Conformance checking is more important than process discovery“, „Let’s stop making BPMN models“, and „We do not need centers of excellence for process mining“.

CELONIS ICPM AFTER-PARTY

Celonis, one of the platinum sponsors of ICPM 2019, kindly offers an additional social event for all ICPM participants. They will organize an “ICPM After-Party” on Tuesday, June 25th (18.30-01.00) with opportunities to Dine, Drink & Dance.

As ICPM participant, you can join, but it is mandatory to register via <https://meet.celonis.com/icpm-after-party/>.

Aposto Aachen, Kapuzinergraben 19, 52062 Aachen



Program

1st International Conference on Process Mining



WEDNESDAY, June 26, 2019 - Room - Club Lounge 1

(Research Day 2)

CONFORMANCE CHECKING 09:00 - 10:30

(Session Chair: Benoît Depaïre)

Alifah Syamsiyah and Boudewijn F. van Dongen - Improving Alignment Computation using Model-based Preprocessing

Artem Polyvyanyy and Anna Kalenkova - Monotone Conformance Checking for Partially Matching Designed and Observed Processes

Marco Pegoraro and Wil van der Aalst - Mining Uncertain Event Data in Process Mining

PANEL ON EMERGING APPLICATIONS OF PROCESS MINING 11:00 - 12:30

(Panel Chair: Marcello La Rosa)

What are the upcoming trends in process mining? And the passing fads? Where will process mining lead us in five years from now? What functionality will survive, evolve or die out? What will be the next wave of compelling applications after healthcare and finance? Listen to the panel chaired by Marcello La Rosa (University of Melbourne) featuring a team of seasoned process mining experts, coming both from academia and industry: Elham Ramezani (KPMG), Ingo Weber (Data 61/TU Berlin), Marc Kerremans (Gartner), Marlon Dumas (University of Tartu), and Mieke Jans (Hasselt University). (See separate page)

DATA ANALYSIS & MONITORING 13:30 - 15:00

(Session Chair: Andrea Burattin)

Bram Knols and Jan Martijn van der Werf - Measuring Log Sampling Quality

Pavlos Delias, Mehdi Acheli and Daniela Grigori - Applying the Method of Reflections through an Event Log for Evidence-based Process Innovation

Patrik Koenig, Juergen Mangler and Stefanie Rinderle-Ma - Compliance Monitoring on Process Event Streams from Multiple Sources

PREDICTIVE MONITORING 15:30 - 17:00

(Session Chair: Boudewijn van Dongen)

Gyunam Park and Minseok Song - Prediction-based Resource Allocation using LSTM and maximum flow and minimum cost algorithm

Vincenzo Pasquadibisceglie, Annalisa Appice, Giovanna Castellano and Donato Malerba - Using Convolution Neural Networks for Predictive Process Analytics

Vadim Denisov, Dirk Fahland and Wil M.P. van der Aalst - Predictive Performance Monitoring of Material Handling Systems Using the Performance Spectrum

TOOL DEMO FAIR 17:15 - 18:15

On a separate page, you can find all papers accepted as a demo for the Demo track of ICPM 2019.

IEEE TASK FORCE ON PROCESS MINING 18:30 - 20:00

See the separate page with information on the Task Force meeting (open to all). Alternatively, take the Sightseeing tour Aachen (see separate page).

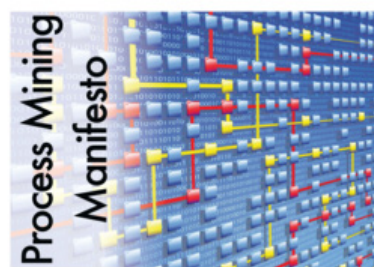
Panel on emerging applications of process mining

Wednesday, June 26th, 2019, 11:30 - 12:30 - ROOM - CLUB - LOUNGE 1

What are the upcoming trends in process mining? And the passing fads? Where will process mining lead us in five years from now? What functionality will survive, evolve or die out? What will be the next wave of compelling applications after healthcare and finance? Listen to the panel chaired by Marcello La Rosa (University of Melbourne) featuring a team of seasoned process mining experts, coming both from academia and industry:

Elham Ramezani (KPMG)
Ingo Weber (Data 61/TU Berlin)
Marc Kerremans (Gartner)

Marlon Dumas (University of Tartu)
Mieke Jans (Hasselt University)



A manifesto is a "public declaration of principles and intentions" by a group of people. This manifesto is written by members and supporters of the IEEE Task Force on Process Mining. The goal of this task force is to promote the research, development, education, implementation, evolution, and understanding of process mining.

Process mining is a relatively young research discipline that sits between computational intelligence and data mining on the one hand, and process modeling and analysis on the other hand. The idea of process mining is to discover, monitor and improve real processes (i.e., not simulated processes) by extracting knowledge from event logs readily available in today's (information) systems. Process mining includes (automated) process discovery (i.e., extracting process models from event logs), conformance checking (i.e., monitoring deviations by comparing model and log), and network organizational mining, automated generation of simulation models.

model extension, model repair, case prediction, and history-based recommendations.

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Process mining techniques are able to extract knowledge from event logs commonly available in today's information systems. These techniques provide new means to discover, monitor, and improve processes in a variety of application domains. There are two main drivers for the growing interest in process mining. On the one hand, more and more events are being recorded, thus providing detailed information about the history of processes. On the other hand, there is a need to improve and support business processes in competitive and rapidly changing environments. This manifesto is created by the IEEE Task Force on Process Mining and aims to promote the topic of process mining. Moreover, by defining a set of guiding principles and facing important challenges, this manifesto hopes to serve as a guide for software developers, academic researchers, business strategists, and end-users. The goal is to increase the maturity of process mining as a tool to improve the (visibility, control, and support of) operational business processes.

IEEE Task Force on Process Mining Annual meeting and discussion on the ICPM conference series

Wednesday, June 26th, 2019, 18:30 - 20:00 - ROOM - CLUB - LOUNGE 1

The IEEE Task Force on Process Mining was established in October 2009. Over 75 organizations are supporting the IEEE Task Force which aims to promote the research, development, education, and understanding of process mining (see <https://www.win.tue.nl/ieeetfpm/>). The Task Force has initiated the Process Mining Manifesto, lead the development of the IEEE XES standard for storing event logs, distributed many publically available event logs, developed promotional material (videos, case studies, etc.), created various competitions and wards, and organized numerous workshops over the last decade (e.g., the BPI workshop series). This first International Conference on Process Mining (ICPM 2019) is another initiative of the Task Force. The main topic of this year's annual Task Force meeting is to discuss the future of the ICPM conference series and the governance of the conference and the Task Force. An inaugural steering committee composed of Wil van der Aalst (chair), Marcello La Rosa, Mieke Jans, Josep Carmona, and Boudewijn van Dongen has been formed to create the ICPM conference series. The goal is to collect input from the process mining community. Everyone is welcome to join the meeting. Moreover, organizations that are willing to help to promote process mining as a discipline are welcome to join the Task Force.

Agenda

- 18.30-18.45 Overview of the work of the IEEE Task Force on Process Mining (Wil van der Aalst)
- 18.45-19.00 Reflecting on this year's ICPM conference (Marcello La Rosa, Mieke Jans, Josep Carmona, Wil van der Aalst)
- 19.00-19.15 Preparations for ICPM 2020 in Padova (Massimiliano de Leoni, Alessandro Sperduti, Boudewijn van Dongen, Moe Wynn, and Montali Marco)
- 19.15-19.45 Discussion on shaping the ICPM conferences series, other activities of the Task Force, and the governance of the ICPM conference and the Task Force
- 19.45-20.00 Closing

(The IEEE Task Force on Process Mining meeting is open to all interested in process mining.)

TOOL DEMO FAIR 17:15-18:15 - Room - Club Lounge 1

The following papers are accepted as a demo on the Demo track of ICPM 2019

(alphabetically ordered on the first name of the first author):

Authors

Alessandro Berti, Sebastiaan van Zelst and Wil van der Aalst

Alexander Seeliger, Maximilian Ratzke, Timo Nolle and Max Mühlhäuser

David Baumgartner, Andreas Haghofer, Martin Limberger and Emmanuel Helm

Eric Verbeek

Janna Meyer, Josua Reimold and Constantin Wehmschulte

Peyman Badakhshan, German Bernhart, Jerome Geyer-Klingenberg, Janina Nakladal, Steffen Schenk and Thomas Vogelgesang

Roeland Scheepens and Erik-Jan van der Linden

Sander J.J. Leemans, Erik Poppe and Moe Wynn

Title

Process Mining for Python (PM4Py): Bridging the Gap Between Process- and Data Science

ProcessExplorer: Interactive Visual Exploration of Event Logs with Analysis Guidance

Process Pruner: A Tool for Sequence-Based Event Log Preprocessing

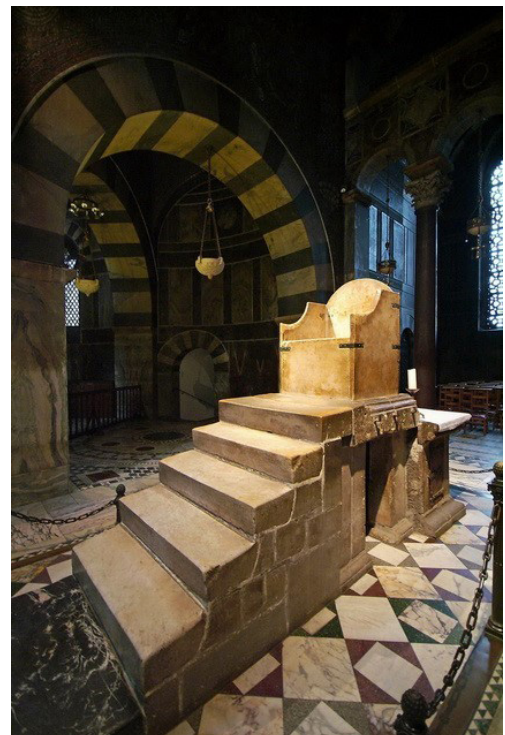
Log Skeleton Filter and Browser

An Introduction to MPM – MEHRWERK ProcessMining

The Action Engine – Turning Process Insights into Action

ProcessGold: Enterprise Process Mining

Directly Follows-Based Process Mining: a Tool



Invited Lectures - Industry Day - Room - Club Lounge 1

The International Conference on Process Mining (ICPM) is the first conference devoted to the rapidly growing process mining discipline. All thought leaders working on process mining will be present at ICPM 2019. ICPM will both show the scientific and the applied side of process mining. Therefore, we are proud to have a very strong scientific program and many eminent industry speakers. The Industry Day (Tuesday) will feature a range of invited lectures, tool demos, and a panel on “the future of process mining”. These complement exciting scientific talks by the leading scientists in the field on Monday and Wednesday. The conference will start on Monday with an opening keynote by Wil van der Aalst (often called the “Godfather of Process Mining”). The conference is supported by the main vendors providing process-mining software. However, the conference is neutral and provides insights that are tool independent. This makes ICPM 2019 “the place to be” for anyone working on process mining.

Marc Kerremans (Gartner)

Research Director | Gartner Research



Process Mining in the Era of the Digital Twin of an Organization

Short biography:

Marc Kerremans works as a Research Director in Gartner Research, specializing in business process management (BPM) as a management discipline and source of technological innovation. Mr. Kerremans researches BPM technology providers, BPM technology futures, the role of business models and user best practices (including the organizational impact of BPM). He recently started new research areas on process mining and business operating models and systems, introducing the concept of a ‘digital twin of an organization’ (DTO).

Before this position, Mr. Kerremans worked as an independent market analyst/management consultant in different industries covering areas such as BPM, performance management, organizational transformation and strategic orientation.

Process Mining at Scale – the plea for a technical Process Mining reference model

Short biography:

As Co-Founder and Lead Data Scientist of Deloitte’s Center of Process Bionics, Julian is heading one of the largest professional service teams dedicated to Process Mining and related disciplines. Over the past seven years, he was key to some of the largest global Process Mining projects, qualifying him as one of the leading experts in the field. Joining functional process knowledge with extensive technical hands-on process mining experience, Julian connects technology to tangible impact. Being the architect of Deloitte’s modular Process Mining Framework, he paved the way to build a strong foundation for a growing number of practitioners in corporations around the globe. Before joining Deloitte, Julian was a key driver for process mining adoption at Siemens.

Julian Lebherz (Deloitte)

Co-Founder and Lead Data Scientist | Deloitte Center of Process Bionics



Marc Gittler (DHL)

Vice President Data Analytics Post | Deutsche Post DHL



Patrick Greifzu (DHL)

Senior Manager Digitalization / Process Optimization | Deutsche Post DHL



How to add Process Mining to the Auditors' toolbox

Short biography:

Marc as the Vice President and Patrick as Senior Manager Data Analytics Post at Deutsche Post DHL Group uses Process Mining for Business Process Optimization, Digitalization Projects and Internal Audit Reviews for the last five years. Together they have over 20 years of experience in leading Internal Audit teams and development of methodology's for data driven audit approaches.

They have integrated process mining into DHL's audit process to improve both the time spent for the analysis and the depth of the information audited. This hypothesis free approach provides a new tool set for auditors to identify unknown process risks.

Before they joined DPDHL they gained audit experience in the financial sector.

Piergiorgio Grossi (Credem Banca)

Chief Innovation Officer | Credem Banca

Credem Digital Transformation with DTO and Process Mining

Short biography:

After spending 10+ years in F1 at Ferrari and almost 3 years at Ducati, the Italian Iconic bikes brand, Piergiorgio is now serving as Chief Innovation Officer at Credem Banca.

Piergiorgio has deep experience in managing innovative products and services, complex projects and ICT departments, mixing heterogeneous technologies and processes, sourcing strategies and team leading, innovation, design, strategy and business definition skills. He's been involved in innovation, management and digital activities for many years, basically doing his best to get out of his comfort zone.



Carsten Schöne (Merck)

Head of ERP Business Process Management and Governance | Merck



Entrepreneurial behavior in a DAX company. Can Process Mining be established bottom up only?

Short biography:

Carsten Schöne is 43 years old and has studied economics at the Ruhr-University Bochum and University of Stockholm. His career at Merck started as functional analyst in warehouse management and distribution with the focus on international SAP roll-out projects. With the implementation of Business Process Management at Merck and a parallel Executive MBA development in St. Gallen he recognized the importance of a comprehensive Business-IT alignment on customer-driven processes. For the last two years, he has been heading a small governance team building up the capability of Process Mining as part of BPM to anchor this mindset and drive business process excellence at Merck.

Dr. Michael Wiese (Ernst & Young)

GSA Assurance Research and Development Leader | Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft

Opportunities and challenges applying Process Mining
in financial audits

Short biography:

Dr. Michael Wiese is responsible partner for research and development for EYs Assurance Business in Germany, Switzerland and Austria. His interdisciplinary team focusses on enabling emerging technologies in the audit of financial statements, such as data analytics, artificial intelligence and process mining. Michael joined EY in 2006 after his studies in management science, taxation, law and auditing. As certified public auditor, Michael has strong expertise in auditing clients from different industries and sizes following diverse legal and financial frameworks. His PhD research studies focussed on the concept of a data driven audit that became part of EYs Digital Audit. Michael is lecturer for Auditing, Business Valuation and Management at University of Essen to enable the transfer between theory and practice.



Bart Prudon (Medtronic)

Business Process Mining Consultant | Medtronic



Process Mining at Medtronic – Our success formula to enable business value

Short biography:

Within Medtronic, Bart is one of the main drivers of the implementation of Process Mining. In his role as Business Consultant Process Mining, he has introduced an approach which is not only focusing on implementing a new technology, but that is founded by a vision on how to enable a continuous improvement culture and to drive value creation. He has positioned Process Mining as a key enabler for transformation programs and has ensured process mining is on the strategic roadmap of Medtronic. Bart strongly believes collaboration between business, enterprise excellence and IT is the key success factor of any business transformation. Combining his passion for processes, IT and continuous improvement, Bart drives unprecedented results for Medtronic.

David Whyte (Canadian Financial Services)

Technology Executive | Canadian Financial Services

Practical implementation of Process Mining at Large North American Financial Services enterprises

Short biography:

Dave is a senior technology executive who has enjoyed a 30+ year career leading teams and delivering strategic solutions in the Financial Services industry to improve customer and employee experience. He has a strong foundation in technology and financial services and was recently SVP of Corporate Centre Technology at Canadian Imperial Bank of Commerce, leading teams accountable for Big Data, Agile@Scale, Robotic Process Automation and large scale business transformations in Finance, HR and Procurement. Dave's teams have leveraged StereoLogic for several large scale business process transformations including a Retail Product Origination re-write across the entire branch network and several Robotic Process Automation initiatives.



Gia-Thi Nguyen (Siemens)

Head of Operational Excellence | Siemens Digital Industries



Unlocking Digital Transformation – the Human Touch

Short biography:

Thi Nguyen is an internationally seasoned leader with experience from assignments in Germany, UK, Czech Republic, Vietnam and Spain.

His former experiences include setting up new factories in Vietnam, restructuring companies in Spain as well as developing the start up business from which the IIOT System known today as Siemens Mindsphere comes from.

Functional roles include various functions in IT (e.g. CIO Siemens Vietnam), Finance (e.g. CFO of BJC, a Siemens subsidiary in Spain) or global programs like Order Management for Tomorrow (OM4T).

At the moment Thi is the Head of Operational Excellence within the Division Digital Industries at Siemens and responsible for the processes from the entire Offer to Order and Order to Cash domain on a global level. Topics include Quotation, Pricing, Sales Backoffice and Order Management operations. Thi is passionate about innovative technologies and eager to share his journey about digital transformation using process mining.

Sudhendu Rai (AIG Investments)

Lead Scientist – Head of Data Driven Process Optimization | AIG Investments

Process Wind Tunnel for Improving Business Processes

Short biography:

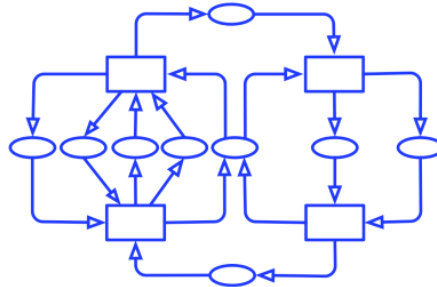
Dr. Sudhendu Rai is a Lead Scientist and Head of Data Driven Process Optimization in the Chief Operating Office (COO) of AIG's Investments organization. He is responsible for development and deployment of process improvement solutions within the AIG service business and operations. He uses data science and operations research methods such as data wrangling, statistical analysis and visualization, process-mining and simulation optimization.

Prior to joining AIG, he was a Research Fellow at PARC and Xerox. In this role, he created a simulation-based print production operational framework called LDP Lean Document Production and led a team that developed the algorithms and software toolkit to support the firm's offerings as well as a training curriculum to train Xerox consultants. Implementation of LDP in more than 100 service operations led to a \$200M positive impact on profit across the Xerox value chain. This work was recognized with the following leading professional awards: the INFORMS Franz Edelman finalist and first place at the IIE Lean best practice award competition. Dr. Rai has advised senior executives, decision-makers and head of operations and Fortune 500 companies to develop process innovation and business transformation solutions. Dr. Rai received his Ph.D. from MIT. He holds 75 patents and has published in 45 technical publications in various areas of services and technology.



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



PETRI NET COURSE - JUNE 23 - 25, 2019

The Petri Net Course takes place on Sunday, Monday, and Tuesday, June 23-25 (choose one of the two advanced tutorials on Tuesday).

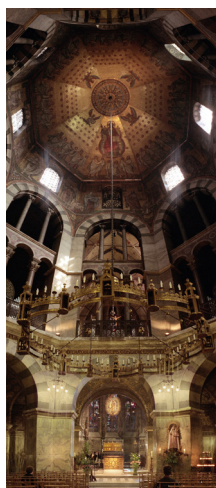
(Please Note: On Sunday, June 23, 2019 the course will take place in the RWTH Informatik Center, Ahornstr. 55, Aachen. See separate page with directions. On Monday and Tuesday, the lectures are at the main conference location: Tivoli Stadium)

Organisers are Jörg Desel (FernU. Hagen) and Jetty Kleijn (Leiden University).

This course offers a thorough introduction to Petri Nets in four half-day modules on Sunday and Monday with on Tuesday a choice from two full-day tutorial module on applications of Petri Nets and/or new developments presented by experts in the area. Each module of the course can be taken separately. In particular, the lectures on Tuesday can be followed as independent tutorials.

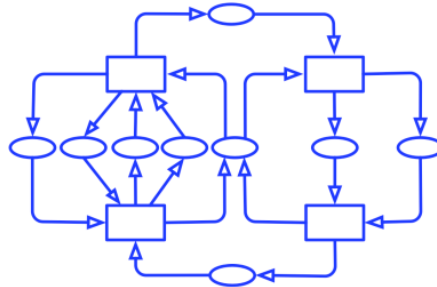
All Petri Net Course modules are open for everyone interested. For the course as a whole, graduate and PhD Students are the intended audience. It is possible to earn credit points (3 ECTS awarded by Leiden University, NL) on basis of successful participation in the Course including: a preparation phase before the Course; examinations for the modules of Sunday and Monday in the form of small exercises or homework; and a written report as an outcome of a project associated with the tutorial chosen for Tuesday.

For the preparation phase, students who have registered for the full course will receive in advance material containing preliminaries on the philosophy of net theory, basic notions, small examples, typical application areas etc. For the examination of the Sunday/Monday modules, time will be available during the course. The completion of the assignment of the Tuesday module will take place after the Petri Net Course as agreed with the lecturer(s).



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Sunday - June 23, 2019 - RWTH Aachen Informatik Center

Basic net classes (Jörg Desel) - Bit Room 5053 / 1 - 09:00 - 12:30

This is the introductory module to the Petri Net Course and as such provides key concepts and definitions underlying almost every Petri net model. Guided by a motivating example, principles of net theory are discussed highlighting local dynamics and concurrency. Two basic net classes are introduced and investigated: Place/Transition Systems and Elementary Net (EN) Systems. We consider the occurrence rule (token game), reachability, state graph, behavioural properties like deadlock and boundedness, behavioural equivalence and normal forms. The fundamental situations causality, conflict, concurrency, and confusion are explained in the context of EN Systems. We discuss EN system behaviour in terms of sequential and non-sequential observations. Finally, basic analysis techniques are presented to establish structural properties of nets.

Coloured Petri Nets Modelling and CPN Tools (Lars Kristensen) - Bit Room 5053 / 1 - 13:30 - 17:00

This module focusses on the constructs and definition of the Coloured Petri Nets (CPNs) modelling language. CPNs belong to the class of high-level Petri nets and combines Petri Nets with the functional programming language Standard ML (SML). Petri nets provides the primitives for modelling concurrency, communication, and synchronisation while SML provides the primitives for modelling data manipulation and for creating compact and parameterised models. CPNs and the supporting computer tool CPN Tools have been widely used in practice for modelling and validating a wide range of concurrent and distributed systems. Having completed this module the participants should be able to:

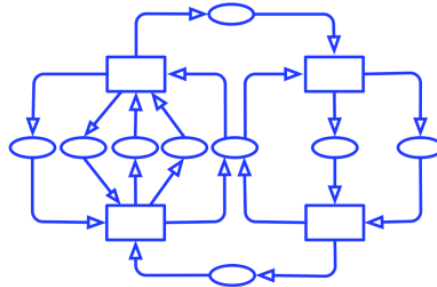
- explain and use the basic constructs of the CPN modelling language
- explain the syntax and semantics of CPNs
- structure CPN models into a hierarchically related set of modules
- apply CPN Tools for construction and simulation of CPN models

The module includes hands-on experiments with CPN Tools.



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Monday - June 24, 2019 - Room Sky Lounge 1

Coloured Petri Nets II - Verification and Applications (Lars Kristensen) - 09:00 - 12:30

Explicit state space exploration is one of the main approaches to computer-aided verification of concurrent systems, and it is one of the main analysis methods for Coloured Petri Nets (CPNs). This module provides an introduction to state space methods in the context of CPNs, and explains how standard behavioural properties of CPNs can be verified fully automatically using state spaces and the support for state space exploration provided by CPN Tools. The module also introduces the basics of temporal logic and associated model checking algorithms for verifying more general behavioral properties of concurrent systems. Examples demonstrating the practical use of CPN modelling and verification on industrial-sized systems will be presented. Having completed this module the participants should be able to:

- define standard behavioural properties of CPNs and express behavioral properties in temporal logic
- explain the basic concepts of state spaces and how they are computed
- explain how behavioural properties can be automatically checked from state spaces
- apply state spaces and model checking techniques for verification of CPN models

The module includes hands-on experiments with CPN Tools.

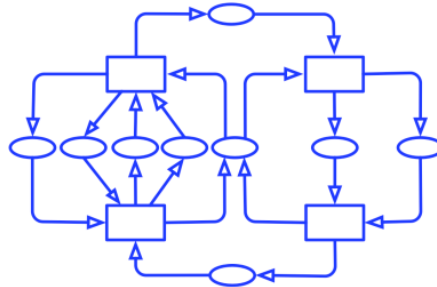
Time(d) and Stochastic Petri nets (Serge Haddad) - 13:30 - 17:15

This module presents different ways to introduce time in Petri nets. The focus will be on two kinds of models: (1) either a time is non deterministically chosen, or (2) it is chosen based on a probability distribution. The two main models associated with non deterministic choices are time Petri nets (TPN) where time is associated with a delay for transition firings and timed Petri nets (TdPN) where time is associated with the age of tokens. We introduce the syntax and semantics of both models and we develop some standard analysis techniques. In generalized stochastic Petri nets (GSPN) the delay for transition firings is obtained by sampling a random variable. For particular kinds of distributions, we describe the construction of a continuous time Markov chain on which the main performance indices can be computed.

The module will include a short description of Markov chains in order to be self-contained.

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Monday - June 24, 2019 - PNSE'19

International Workshop on Petri Nets and Software Engineering

For the successful realization of complex systems of interacting and reactive software and hardware components the use of a precise language at different stages of the development process is of crucial importance. Petri nets are becoming increasingly popular in this area, as they provide a uniform language supporting the tasks of modeling, simulation, validation, and verification. Their popularity is due to the fact that Petri nets capture fundamental aspects of causality, concurrency and choice in a natural and mathematically precise way without compromising readability.

The workshop PNSE'19 (Petri nets and Software Engineering) will take place as a satellite event of Petri Nets 2019 and ACSD 2019.

The use of Petri nets (P/T-nets, colored Petri nets and extensions) in software engineering, covering modeling, validation, and verification, will be presented as well as their application and tools supporting the disciplines mentioned above.

This year we will put an emphasize on the impact of software engineering in general and its model based development on Petri nets by their concepts, methods, techniques and tools. Therefore we especially invite contributions that work on subjects that could(!) be relevant for Petri nets, their applications or their tools. Results on other formalisms or semi-formal techniques, their concepts, methods, tools and experiences (successful or not successful) are highly welcome.

As model based development has proven to be very successful, we want to discuss ideas, applications, concepts, foundations and recent results from the area of modeling during the workshop. Communication is based on models, therefore, the transformation from domain models to software models and back are major tasks that we want to discuss during the workshop from several perspectives. Last but not least, in the context of any organizational institution, the roles of modeling and how to use concepts, methods or tools for modeling may be addressed

The idea is to inspire the Petri nets community with new ideas, insights, relevant concepts, etc.

Invited Speaker - Jan Mendling

Deputy Head of Department - (Vienna University of Economics and Business)

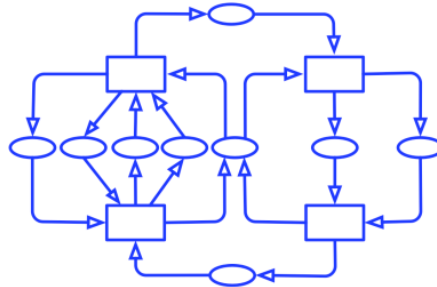


Short biography:

Prof. Dr. Jan Mendling is a Full Professor with the Institute for Information Business at Wirtschaftsuniversität Wien (WU Vienna), Austria. His research interests include various topics in the area of business process management and information systems. He has published more than 250 research papers and articles, among others in ACM Transactions on Software Engineering and Methodology, IEEE Transaction on Software Engineering, Information Systems, Data & Knowledge Engineering, and Decision Support Systems. He is member of the editorial board of seven international journals, member of the board of the Austrian Society for Process Management (<http://prozesse.at>), one of the founders of the Berlin BPM Community of Practice (<http://www.bpmb.de>), organizer of several academic events on process management, and member of the IEEE Task Force on Process Mining. His Ph.D. thesis has won the Heinz-Zemanek-Award of the Austrian Computer Society and the German Targion-Award for dissertations in the area of strategic information management.

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Monday - June 24, 2019 - Press Conference Room

PNSE`19 program

Session: 9:00 – 10:30

(Session Chair: Manuel Wimmer)

Hans Vangheluwe - Petri Nets in Multi-Paradigm Modelling (invited talk)

Elena Gómez-Martínez, Juan de Lara and Esther Guerra - Towards extensible structural analysis of Petri net product lines (long talk)

Session: 11:00 - 12:30

(Session Chair: Daniel Moldt)

Torsten Liebke and Karsten Wolf - Solving $E(\varphi \cup \psi)$ using the CEGAR approach (long talk)

Wen Zeng and Vasileios Germanos - Modelling Hybrid Cyber Kill Chain (short talk)

Talal Alharbi and Maciej Koutny - Domain Name System (DNS) Tunneling Detection using Structured Occurrence Nets (SONs) (short talk)

Maxi Weichenhain and Wolfgang Fengler - A Petri Net Table Model Applied to Classic and Agile Project Management (short talk)

Session: 13:30 - 15:00

(Session Chair: Ekkart Kindler)

Jan Mendling - Quotients for Behaviour Comparisons: Monotone Precision and Recall Measures for Process Mining (invited talk)

Piotr Chrzastowski-Wachtel, Michał Doleżek, Paweł Greipner and Tomasz Wójcicki - Petri Meta-Compiler - a Recursive Approach to System Design and Development (short talk)

Jan Henrik Röwekamp, Matthias Feldmann, Daniel Moldt and Michael Simon - Simulating Place/Transition Nets by a Distributed, Web Based, Stateless Service (poster presentation)

Michael Simon, Daniel Moldt, Henri Engelhardt and Sven Willrodt - A First Prototype for the Visualization of the Reachability Graph of Reference Nets (poster presentation)

Session: 15:30 - 17:00

(Session Chair: Maciej Koutny)

Alejandro Rodríguez, Lars Michael Kristensen and Adrian Rutle - On CTL Model Checking of the MQTT IoT Protocol using the Sweep-Line Method (long talk)

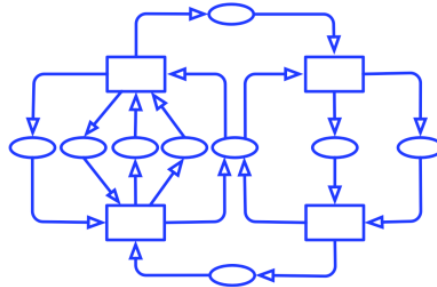
Federica Adobbati, Luca Bernardinello and Lucia Pomello - An asynchronous game on distributed Petri nets (long talk)

Jose J. P. Z. S. Tavares and Gabriel De A. Souza - PNRD and iPNRD Integration Assisting Adaptive Control in Block World Domain (long talk)

Closing 17:00

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Tuesday - June 25, 2019 - ATAED'19

Algorithms & Theories for the Analysis of Event Data 2019

The workshop Algorithms & Theories for the Analysis of Event Data (ATAED 2019) is a satellite event of the 40th International Conference on Application and Theory of Petri Nets and Concurrency (PN 2019) and the 19th International Conference on Application of Concurrency to System Design (ACSD 2019).

This year, the workshop is co-located with the 1st International Conference on Process Mining (ICPM 2019). The workshop aims to attract papers related to process mining, region theory and other synthesis techniques.

These techniques have in common that "lower level" behavioral descriptions (event logs, sets of partial orders, transition systems, etc.) are used to create "higher level" process models (e.g., various classes of Petri nets, BPMN, or UML activity diagrams).

Invited Talk - Wolfgang Reisig

Humboldt-Universität zu Berlin, Germany

Short biography:



Wolfgang Reisig is a full professor at the Computer Science Institute of Humboldt-Universität zu Berlin, Germany. He served as a research assistant and assistant professor at the University of Bonn and at RWTH Aachen, a visiting professor at Hamburg University, a project manager at Gesellschaft für Mathematik und Datenverarbeitung (GMD), and a professor at Technical University of Munich.

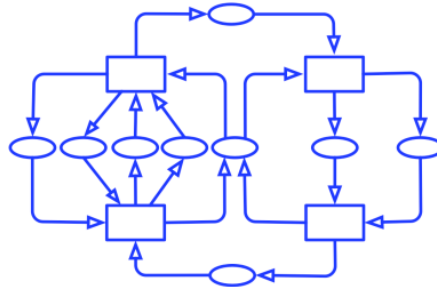
Prof. Reisig was a senior research at the International Computer Science Institute (ICSI) in Berkeley, California in 1997, got the "Lady Davis Visiting Professorship" at the Technion, Haifa (Israel), the Beta Chair of Technical University of Eindhoven, and twice received an IBM Faculty Award for his contribution to Cross-organizational Business Processes and the Analysis of Service Models. He has been the speaker of a PhD school on Service Oriented Architectures, 2010 – 2017.

Prof. Reisig is a member of the European Academy of Sciences, Academia Europaea. He published and edited numerous books and articles on Petri Net Theory and Applications.

During his time at GMD, 1984 – 1988, he worked in the "Institute for Information systems research", headed by Carl Adam Petri.

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Tuesday - June 25, 2019 - Press Conference Room

ATAED'19 program

Session: 9:00 – 10:30

Wolfgang Reisig - How to analyze BIG systems? (Invited talk)

Raymond Devillers, Evgeny Erofeev, Thomas Hujsa - Synthesis of Weighted Marked Graphs from Circular Labelled Transition Systems

Session: 11:00 - 12:30

Jörg Desel - Can a Single Transition Stop an Entire Net?

Adrian Puerto Aubel, Carlo Ferigato, Federica Adobbati, Stefano Gandelli - Two Operations for Stable Structures of Elementary Regions

Nassim Laga, Marwa Elleuch, Walid Gaaloul, Oumaima Alaoui Ismaili - Emails Analysis for Business Process Discovery

Session: 13:30 - 14:30

Ronny Tredup, Christian Rosenke - On the Hardness of Synthesizing Boolean Nets

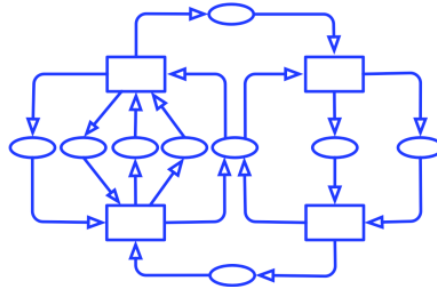
Alessandro Berti, Wil van der Aalst - Reviving Token-based Replay: Increasing Speed While Improving Diagnostics

Closing: 14:30

Participants are invited to join the panel on the future of process mining after the closing.

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Tuesday - June 25, 2019 - Room Sky Lounge 1

Tutorial on Verification (Karsten Wolf) - 09:00 - 17:15

Model Checking for Petri Nets – From Algorithms to Technology

In the beginning, model checking was just a set of algorithms: given a system model and a specification (written in a temporal logic), decide whether the model satisfies the specification. The problem is challenging, mainly due to the state explosion problem. State explosion can be addressed in various ways. This has led to a wealth of technology: data structures, implementations, and approaches. In this course, model checking differentiated by the application domain. For instance, the main challenge in software model checking is to find appropriate abstractions for the data structures.

Petri net model checking has developed into its own branch of model checking. It can be characterized by:

- Absence of data structures (most Petri net model checkers operate on place/transition nets),
- Locality, monotonicity, and linearity of the firing rule,
- Presence of massive concurrency, and
- Availability of results from Petri net theory.

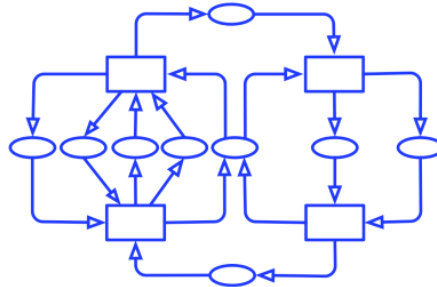
Since 2011, progress in Petri net model checking has been propelled through the yearly Model Checking Contest.

The tutorial spans the whole spectrum from basic algorithms to state-of-the-art technology. At every stage, we show where and how our application domain Petri nets impacts the design of a Petri net model checker. We demonstrate the results using the LoLA 2 model checking tool that is freely available.



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Tuesday - June 25, 2019 - Room Sky Lounge 4

Tutorial (Ekkart Kindler) - 09:00 - 17:15

Model - based Software Engineering for/with Petri Nets

Model-based Software Engineering (MBSE) is a catch-all term for software development technologies in which models are more than just „nice sketches“ or „drawings“. In MBSE, models are mostly used for generating some parts of the code automatically from models or for executing models directly. The OMG's Model Driven Architecture (MDA) is probably one of the most prominent approaches in this direction and Eclipse EMF is a very popular technology supporting MBSE. But, MBSE also covers approaches that are more focused on analyzing or verifying software models.

Petri nets have been used for modelling for a long time now and they are successfully used in different areas of software and systems development. Though Petri nets are used in all stages of software development, many approaches focus on the early phases of the development process and for building prototypes; the actual software is often still programmed manually.

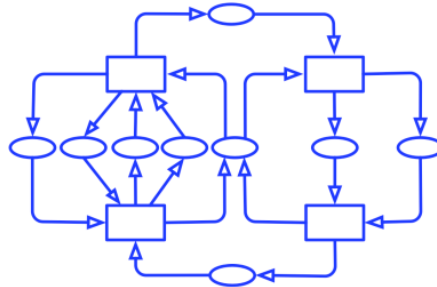
This course presents the idea, the main concepts, and some technologies of MBSE — with the focus on automatic code generation. On the one hand, these technologies can be used for developing Petri net tools in a more efficient way. On the other hand, they can be used to generate parts of the software automatically from Petri net models. More importantly, we will see how Petri nets and the code generated from them can be integrated with other software.

The course will be based on the experiences with Eclipse EMF and developing the ePNK based on EMF, and discuss the lessons learned with developing the ECNO Tool, which allows to generate software completely automatically from models which consists of the Event Coordination Notation and ECNO nets (which are a special version of Petri nets for modeling the life-cycle of is components).



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Wednesday - June 26, 2019 - Press Conference Room

Petri Nets

Opening Session (General Chair and PC chairs) 09:00 – 9:15

Welcome by the General Chair, introduction of program by the PC Chairs.

Carl Adam Petri Lecture (CAP) 09:15 – 10:15

(Shared ACSD and Petri Nets, Session Chair: Stefan Haar)

Luca Cardelli. Programmable Molecular Networks

Synthesis 11:00 – 12:30

(Session Chair: Thomas Chatain)

Raymond Devillers - Articulation of Transition Systems and its Application to Petri Net Synthesis

Ronny Tredup - Hardness Results for the Synthesis of b-bounded Petri Nets

Ronny Tredup - Fixed Parameter Tractability and Polynomial Time Results for the Synthesis of b-bounded Petri Nets

Semantics 13:30 – 15:00

(Session Chair: Karsten Wolf)

David Frutos Escrig, Maciej Koutny and Lukasz Mikulski - Reversing Steps in Petri Nets

Ryszard Janicki - On Interval Semantics of Inhibitor and Activator Nets

Lukasz Mikulski and Ivan Lanese. - Reversing Unbounded Petri Nets

Models with extensions 15:30 – 17:00

(Session Chair: Lukasz Mikulski)

Alain Finkel, Serge Haddad and Igor Khmelnitsky - Coverability and Termination in Recursive Petri Nets

Marco Montali and Andrey Rivkin - From DB-nets to Coloured Petri Nets with Priorities

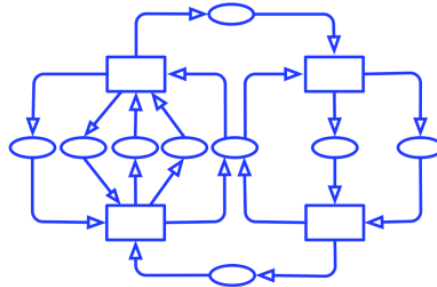
Didier Lime, Olivier H. Roux and Charlotte Seidner - Parameter Synthesis for Bounded Cost Reachability in Time Petri Nets

(Optional: Annual IEEE Task Force on Process Mining Meeting (18:30 - 20:00))

Sightseeing tour - 19:30 - see separate page for more information

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Distinguished Carl Adam Petri Lecture (CAP) - Luca Cardelli

University of Oxford



Short biography:

Luca Cardelli has an M.Sc. in computer science from the University of Pisa, and a Ph.D. in computer science from the University of Edinburgh. He worked in the USA at Bell Labs, Murray Hill, from 1982 to 1985, and at Digital Equipment Corporation, Systems Research Center in Palo Alto, from 1985 to 1997, and at Microsoft Research, in Cambridge UK from 1997 to 2018 where he was head of the Programming Principles and Tools and Security groups until 2012. Since 2013 he is a Royal Society Research Professor at the University of Oxford.

His main interests are in programming languages and concurrency, and more recently in programmable biology and nanotechnology. He is a Fellow of the Royal Society, a Fellow of the Association for Computing Machinery, an Elected Member of the Academia Europaea, and an Elected Member of the Association Internationale pour les Technologies Objets.

Programmable Molecular Networks

Chemical reactions have been widely used to describe natural phenomena, but increasingly we are capable of using them to prescribe physical interactions, e.g. in DNA computing and synthetic biology.

Thus, chemical reaction networks can be used as naturally concurrent programs that can be physically realized to produce and control molecular arrangements. Because of their relative simplicity and familiarity, and more subtly because of their computational power, they are quickly becoming a paradigmatic “programming language” for bioengineering. We discuss what can be programmed with chemical reactions, how these programs can be physically realized, and how they relate to the theory of concurrency.

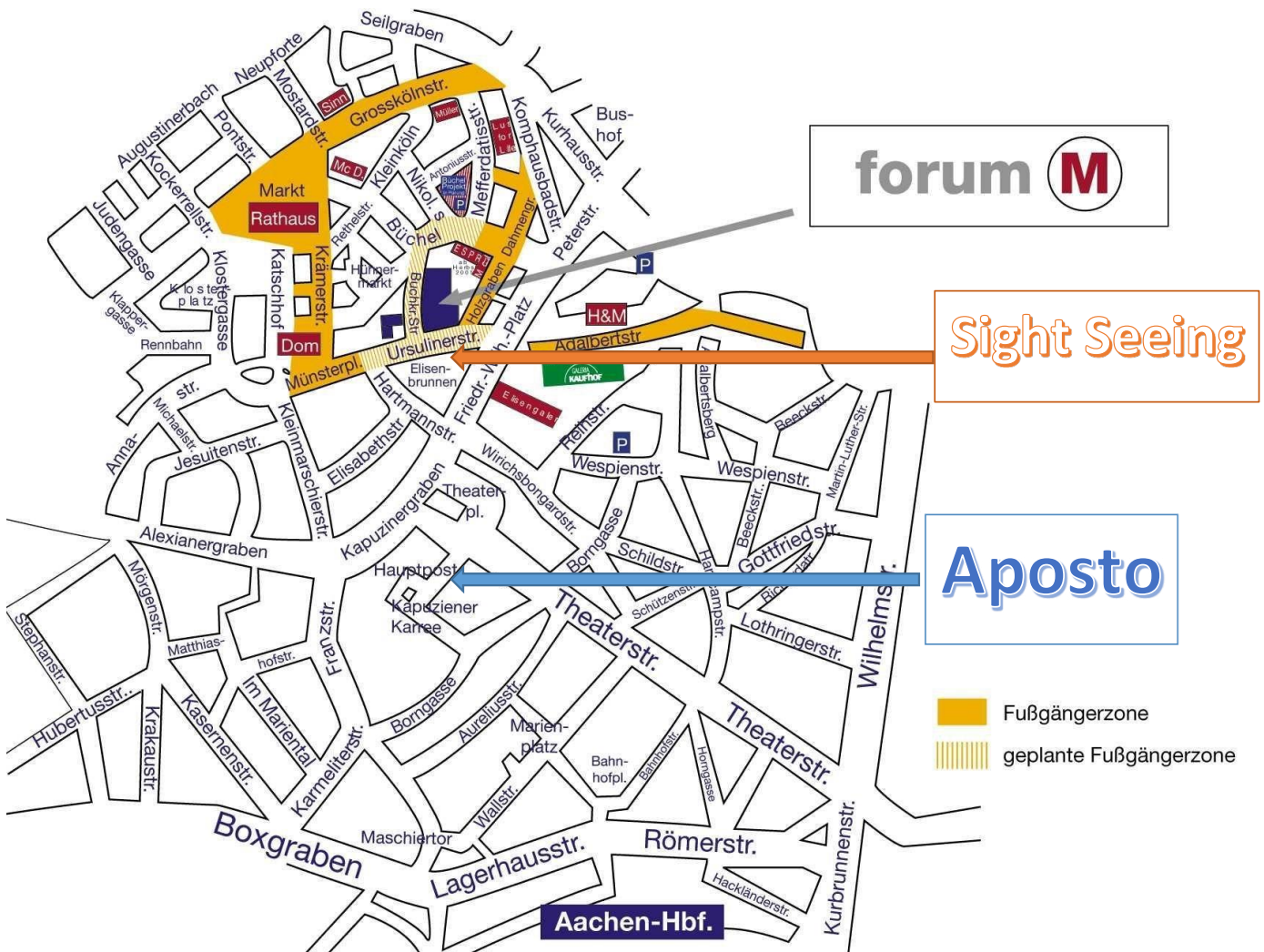
Distinguished Carl Adam Petri Lecture (CAP) Series

The Carl Adam Petri Lecture (CAP) series was created to honor Carl Adam Petri after he died in 2010. Only the top scientists in the field are invited to give such a distinguished lecture. Luca Cardelli will give the 10th CAP lecture. Earlier CAP lectures were given by D. Harel (Braga, Portugal, 2010), B. Randell (Newcastle, UK, 2011), C.A.R. Hoare (Hamburg, Germany, 2012), M. Vardi (Milano, Italy, 2013), W.M. Wonham (Tunis, Tunisia, 2014), M. Rabin (Brussels, Belgium, 2015), I. Foster (Torun, Poland, 2016), T.A. Henzinger (Zaragoza, Spain, 2017), O. Grumberg (Bratislava, Slovakia, 2018).

SIGHTSEEING TOUR - WEDNESDAY, JUNE 26, 2019, 19:30

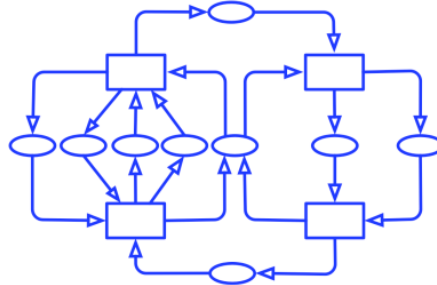
Meeting point: Tourist Info Eisenbrunnen, Friedrich-Wilhelm-Platz, 52062 Aachen

The sightseeing tour will show Aachen, the 2000-year-old city that is well known for being home to the first UNESCO World Heritage Site in Germany. It's impossible to overestimate the significance of Aachen's magnificent cathedral. The burial place of Charlemagne (Karl der Große), it's where more than 30 German kings were crowned and where pilgrims have flocked since the 12th century. Also do not miss the old city, the beautiful city hall, and the Eisenbrunnen. If you have registered for the tour, make sure to be at the tourist Info Eisenbrunnen at the Friedrich-Wilhelm-Platz at 19.30.



Program

19th International Conference on Application of Concurrency to System Design



Thursday - June 27, 2019 - ACSD

ACSD 2019

Program

The ACSD conference is co-located with the 40th International Conference on Applications and Theory of Petri Nets and Concurrency (Petri Nets 2019) and shares the invited lectures.

Session Chair: 09:00 – 10:00 - [Room Club Lounge 1](#)

Invited talk ACSD (Shared ACSD and Petri nets) - Philippas Tsigas

Lock-free Data Sharing in Concurrent Software Systems

(Petri nets will stay in Club Lounge 1, ACSD moves to Press Conference Room.)

Arbitration 10:00 – 10:30 ([Press Conference Room](#))

(Session Chair: Jörg Keller)

Stanislavs Golubcovs, Andrey Mokhov, Alex Bystrov, Danil Sokolov and Alex Yakovlev - Generalised Asynchronous Arbiter

Synthesis and Verification 11:00 – 12:30 ([Press Conference Room](#))

(Session Chair: Wojciech Penczek)

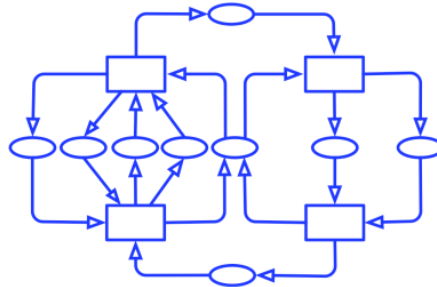
Étienne André, Emmanuel Coquard, Laurent Fribourg, Jawher Jerray and David Lesens - Scheduling Synthesis for a Launcher Flight Control Using Parametric Stopwatch Automata

Hiba Ouni, Kais Klai, Chiheb Ameur Abid and Belhassen Zouari - Towards Parallel Verification of Concurrent Systems Using the Symbolic Observation Graph

Étienne André, Didier Lime, Mathias Ramparison and Mariëlle Stoelinga - Parametric Analyses of Attack-fault Trees

Program

19th International Conference on Application of Concurrency to System Design



Thursday - June 27, 2019 - Press Conference Room

ACSD

Dataflow and Parallel Computing 13:30 – 15:00

(Session Chair: Laure Petrucci)

Keryan Didier, Albert Cohen, Adrien Gauffriau and Dumitru Potop Butucaru - Sheep in Wolf's Clothing: Implementation Models for Data-flow Multi-threaded Software

Markus Anders and Klaus Schneider - A Formal Semantics of Exposed Datapath Architectures with Buffered Processing Units

Nicolas Melot, Christoph Kessler, Patrick Eitschberger and Jörg Keller - Co-optimizing Core Allocation, Mapping and DVFS in Streaming Programs with Moldable Tasks for Energy Efficient Execution on Manycore Architectures

Processes 15:30 – 17:00

(Session Chair: Stefan Haar)

Farbod Taymouri and Josep Carmona - Structural Computation of Alignments of Business Processes over Partial Orders

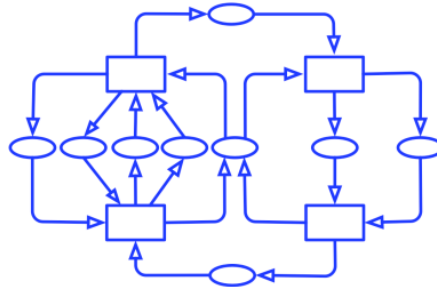
Paolo Felli, Massimiliano de Leoni and Marco Montali - Soundness Verification of Decision-Aware Process Models with Variable-to-Variable Conditions

Jean-Luc Béchenec, Didier Lime and Olivier H. Roux - Control of DES with Urgency, Avoidability and Ineluctability



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Thursday - June 27, 2019 - Room - Club Lounge 1

Session Chair: 09:00 – 10:00

(Session Chair: Jörg Keller)

Invited talk ACSD (Shared ACSD and Petri nets) - Philippas Tsigas

Lock-free Data Sharing in Concurrent Software Systems

Stochastic Models 10:00 – 10:30

(Session Chair: Anna Kalenkova)

Giulio Masetti, Leonardo Robol, Silvano Chiaradonna and Felicita Di Giandomenico

Stochastic modeling and evaluation of large interdependent composed models through Kronecker algebra and exponential sums

Concurrent Processes 11:00 – 12:30

(Session Chair: Robert Lorenz)

Mathilde Boltenhagen, Thomas Chatain and Josep Carmona - Generalized Alignment-Based Trace Clustering of Process Behavior

Lisa Luise Mannel and Wil M. P. van der Aalst - Finding Complex Process-Structures by Exploiting the Token-Game

Felix Freiberger and Holger Hermanns - Concurrent Programming from pseuCo to Petri

Algorithmic Aspects 13:30 – 15:00

(Session Chair: Gianfranco Ciardo)

Shruti Biswal and Andrew S Miner - Improving Saturation Efficiency with Implicit Relations

Vince Molnár and István Majzik - Saturation Enhanced with Conditional Locality: Application to Petri Nets

Torsten Liebke and Karsten Wolf - Taking Some Burden off an Explicit CTL Model Checker

Tools (20 minutes per talk) 15:30 – 16:50

(Session Chair: Ekkart Kindler)

Jan Henrik Röwekamp and Daniel Moldt - RenewKube: Reference Net Simulation Scaling with Renew and Kubernetes

Matteo Camilli, Carlo Bellettini and Lorenzo Capra - PNemu: an Extensible Modeling Library for Adaptable Distributed Systems

Jan Martijn Van Der Werf and Lucas Steehouwer - CoRA: an Online Intelligent Tutoring System to Practice Coverability Graph Construction

Michael Simon, Daniel Moldt, Dennis Schmitz and Michael Haustermann - Tools for Curry-Coloured Petri Nets

Tools Demonstrations 16:50 – 17:30

(Session Chair: Bas van Zelst)

Invited Talk ACSD - Philippos Tsigas

Chalmers University of Technology



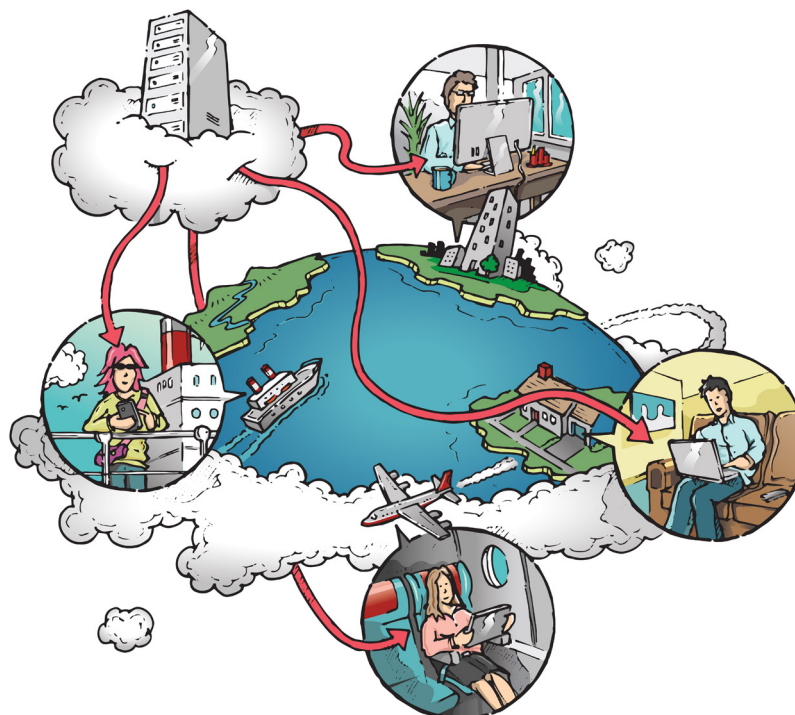
Short biography:

Philippos Tsigas is a Professor in the Department of Computing Science and Engineering at Chalmers University of Technology. He received a BSc in Mathematics from the University of Patras, Greece and a Ph.D. in Computer Engineering and Informatics from the same University in 1994. From 1993 to 1994 he was with the National Research Institute for Mathematics and Computer Science in the Netherlands (CWI), Amsterdam. From 1995 to 1997 he was with the Max-Planck Institute for Computer Science, Saarbrücken, Germany. He joined Chalmers University of Technology in 1997. He is the co-founder and the co-head of the Distributed Computing and Systems research group at Chalmers where he works on research topics in parallel and distributed computing and systems, data streaming, security, communication networks, and information visualization. His work appeared in over 120 conference papers and 45 journals.

Lock-free Data Sharing in Concurrent Software Systems

Abstract: Concurrent data structures provide the means to multi-threaded applications to share data. Typical designs of concurrent data structures are based on locks in order to avoid inconsistency due to concurrent modifications. Locks though introduce a sequential component in Amdahl's law. Lock-free algorithmic designs of concurrent data structures were introduced in the quest for better performance and scalability and are widely used in practice. Lock-free designs typically employ optimistic conflict control making performance analysis challenging.

In this talk, I will describe recent efforts in improving their scalability and performance by introducing semantic relaxation and also efforts in modeling and analyzing their performance



Tools Demonstrations

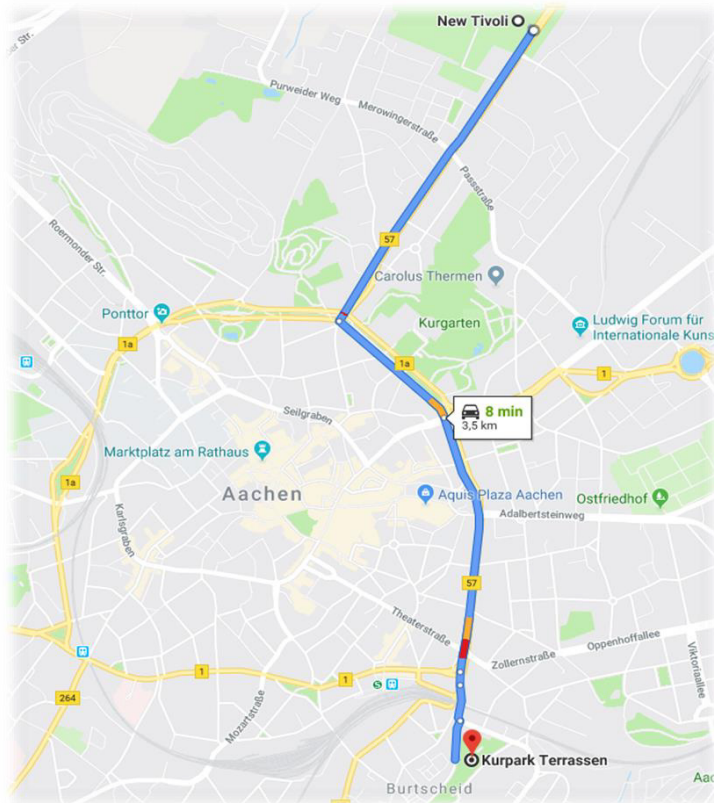
Presenter(s) / Developer(s)	Tool	Website / Reference
Frank Mueller	REALIST	http://www.ima.uni-stuttgart.de/realist
Felix Freiburger, Holger Hermanns	PSEUCO.COM	https://pseuco.com/
Jan Henrik Roewekamp	RENEWKUBE	https://paose.informatik.uni-hamburg.de/paose/wiki/RenewKube
Michael Simon	CCPN	https://git.informatik.uni-hamburg.de/tgipublic/ccpn/ccpn/wikis/pn19
Alessandro Berti	PM4Py	http://pm4py.pads.rwth-aachen.de/
Ekkart Kindler	ePNK	http://www2.compute.dtu.dk/~ekki/projects/ePNK/index.shtml
Jaime Arias	CosyVerif	http://www.cosyverif.org/documentation/
Jan Martijn van der Werf	Cora	NA



Conference Dinner Petri Nets / ACSD - Kurpark-Terrassen

Thursday, June 27th, 19.30

Dammstraße 40, 52066 Aachen



By public transport

From Sportpark Soers station, take line 51 to the Rosenquelle station. Head northwest on Kurbrunnenstraße toward Bachstraße. Turn left onto Dammstraße. You can also take line 51 or line 21 from Eisenbrunnen to Rosenquelle. Walking takes about 20 minutes from Eisenbrunnen.

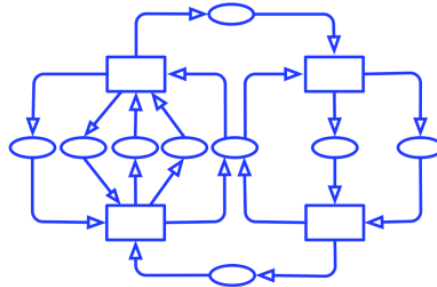
By car

Head southwest on Krefelder Str./B57 toward Am Gut Wolf (1.4 km). Use the left 2 lanes to turn left onto Monheimsallee/B1a (600 m). Continue onto Heinrichsallee/B1/B264. Continue to follow B1/B264 (1.1 km). Continue onto Kurbrunnenstraße/B57 (57 m). Keep left to continue on Jägerstraße/Kurbrunnenstraße. Continue to follow Kurbrunnenstraße (160 m). Turn right onto Dammstraße. Kurpark will be on the left.



Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Friday - June 28, 2019 - Room - Club Lounge 1

Invited talk Petri nets (Shared ACSD and Petri nets) 09:00 – 10:00

(Session Chair: Susanna Donatelli)

Dirk Fahland - Describing, Discovering, and Understanding Multi-Dimensional Processes

Open Nets: 10:00 – 10:30

(Session Chair: Ryszard Janicki)

Walter Vogler and Vitali Schneider - Modal Open Nets

Parametrics and Combinatorics: 11:00 – 12:00

(Session Chair: Serge Haddad)

Chana Weil-Kennedy, Mikhail Raskin and Javier Esparza - Parameterized Analysis of Immediate Observation Petri Nets

Olivier Bodini, Matthieu Dien, Antoine Genitrini and Frederic Peschanski - The Combinatorics of Barrier Synchronization

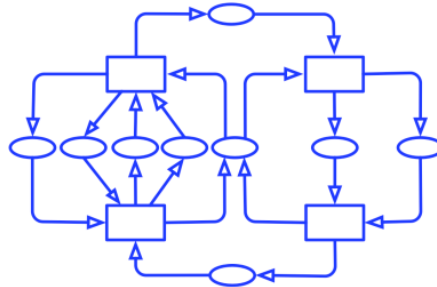
Session: 12:00 – 12:30

(Session Chair: Maciej Koutny)

Closing session and presentation of Petri nets 2020 in Paris

Program

40th International Conference on Application and Theory of Petri Nets and Concurrency



Invited Talk - Dirk Fahland

Eindhoven University of Technology



Short biography:

Dirk Fahland is an Assistant Professor in the Analytics for Information Systems group at Eindhoven University of Technology (TU/e). Starting from a strong background in construction and analysis of distributed systems with formal models, he has, over the years, embraced event data as a central source for system analysis. A central theme in Dirk's research is analyzing data and systems that are too large or complex to be understood as monolithic end-to-end processes executed in isolation.

Dirk's approach is to analyze and describe such systems as a complex network of behavior from several different angles through large-scale event data pre-processing and querying as well as discovering, synthesizing, and transforming formal models from event data. Dirk has published over 45 articles at international journals and conferences.

Describing, Discovering, and Understanding Multi-Dimensional Processes

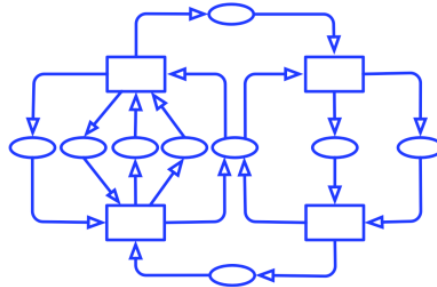
Abstract: Processes are a key application area for formal models of concurrency. Petri nets shaped both research and industrial process modeling languages, tools, and analysis techniques like no other discipline from basic model syntax up to automated discovery of process models from event data. The most adopted model-driven techniques are centered around describing and analyzing the control-flow of a well-structured process instance in isolation - within this single dimension one could argue the case to be "solved".

Unaddressed challenges in modeling and analysis arise where processes are not well-structured or not isolated from each other. In both cases, a single process model can no longer adequately describe process behavior.

Taking recorded event data from such processes as a starting point, I will outline and develop a number of challenges and characteristics of such processes that can be observed in practice. I will discuss how the behavior of such processes can be classified along different dimensions and outline a few fundamental net-affine concepts that complement concepts from Petri nets and allow to adequately describe the behavior of such processes.

Program

40 years of Petri Net Conferences



Friday - June 28, 2019 - Room - Club Lounge 1

Retrospective and Perspective of Petri Net Research

On the occasion of the 40th birthday of the Petri net community, a special session will take place just after the closing of the Petri Net Conference. Outstanding speakers will reflect on the history of Petri net research and its future. This event is open to everybody and not only to participants of the Petri Net Conference.

Session 1: 13:30 - 14:50

(Chair: Jörg Desel)

13.30 Wolfgang Reisig: How it all began

14.10 Maciej Koutny: The Petri net community today (including statistics)

Session 2: 15:10 - 16:30

(Chair: Alex Yakovlev)

15.10 Gianfranco Balbo: 35 years of (generalized) stochastic Petri nets for performance analysis

15.30 Javier Esparza: 25 years of net unfoldings and true-concurrency analysis tools

15.50 Wil van der Aalst: 20 years of workflow Petri nets, initiating the biggest success story of Petri nets

16.10 Fabrice Kordon: 10 years of model checking contests with Petri nets

Session 3: 17:00 - 18:00

(Chair: Jetty Kleijn)

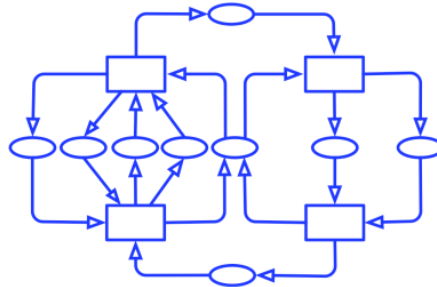
17.00 P.S. Thiagarajan: Some thoughts on Carl Adam Petri, Petri nets, concurrency theory and biology

Dinner to celebrate 40 years of Petri nets

(invited guests only) - Hotel „Zur Abtei“ Kornelimünster

Program

40 years of Petri Net Conferences



Jörg Desel (Chair)

FernUniversität Hagen



Short biography:

Jörg Desel is a full professor at FernUniversität in Hagen, the leading distance university in Germany. Since 2015, he is the dean of the Faculty of Mathematics and Computer Science. Jörg Desel studied at the University of Bonn and received his doctorate degree from Technical University Munich in 1992 and his Habilitation in 1997 from Humboldt-Universität zu Berlin. His research interest concentrates on theory and application of process modeling languages, with an emphasis on semantics, analysis and synthesis of process models. From 1998 until 2010, he had a position as full professor at the Catholic University in Eichstätt, Germany. Jörg Desel (co-)authored or (co-)edited 20 books, published more than 50 peer-reviewed papers in journals or books and has numerous further publications. He is a member of the steering committees of the International Petri Net Conference series, of the Business Process Management conference series and of the Application of Concurrency to System Design conference series. He was the editor

in chief of the Petri Net newsletter and is a member of the editorial board of the International Journal of Business Process Integration and Management. He has organized several conferences, chaired more than ten program committees and was a member of numerous program committees.

Maciej Koutny

Newcastle University

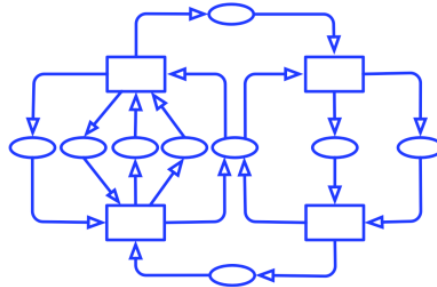
Short biography:

Maciej Koutny is a Professor of Computing Science in the School of Computing at Newcastle University, United Kingdom. His research interests centre on the theory of distributed and concurrent systems, including both theoretical aspects of their semantics and application of formal techniques to the modelling, synthesis and verification of such systems. Maciej Koutny has published over 80 journal papers, 14 books (as author or editor), and 100 refereed conference/workshop publications. He is the chair of the Steering Committee of the International Conferences on Application and Theory of Petri Nets and Concurrency, and serves as the editor-in-chief of the LNCS Transactions on Petri Nets and Other Models of Concurrency – ToPNoC. He is a board member of EATCS-Springer book series “Monographs in Theoretical Computer Science” and “Texts in Theoretical Computer Science”, as well as an advisory board member of Springer book series “Natural Computing”. Maciej Koutny is an Adjunct Professor at McMaster University, Canada. In 2011 he held the Pascal Chair at Leiden University, The Netherlands. He has also been a Visiting Professor at Xidian University, China; University of Evry, France; Nicolaus Copernicus University, Torun, Poland; and University Paris 12, France.



Program

40 years of Petri Net Conferences



Alex Yakovlev (Chair)

Newcastle University

Short biography:



Alex Yakovlev is Professor of Computer Systems Design at the School of Engineering, Newcastle University, where he has been working since 1991. He received DSc from Newcastle University in 2006, and PhD from St. Petersburg Electrotechnical University (Russia) in 1982, both in the field of asynchronous systems. At Newcastle, since 2000 he is Head of Microsystems Group and Founder of Asynchronous Systems Lab, with 55 PhD alumni. He is an international pioneer of low-power asynchronous circuit design and design automation, for which he was elected to Fellow of IET in 2015, Fellow of IEEE in 2016 and Fellow RAEng in 2017. In 2018 He was awarded an IET Achievement Medal for contributions in electronic engineering. His team is well-known for contributions in designing asynchronous circuits, concurrent systems, Petri nets, metastability and synchronizers. His Signal Transition Graphs model underpin asynchronous design automation tools Petrify and Workcraft that are used worldwide in industry and academia. He has published 8 monographs and over 300 papers in top international journals and conferences. He has been Chair of the Steering Committee of ACSD since 2001.

Gianfranco Balbo

Torino University

Short biography:

Gianfranco Balbo is Emeritus Professor at the Informatics Department of Torino University, after retiring as Full Professor in November 2016. Since January 2017, he is also Visiting Lecturer at the Computer Science Department of Iowa State University, USA.

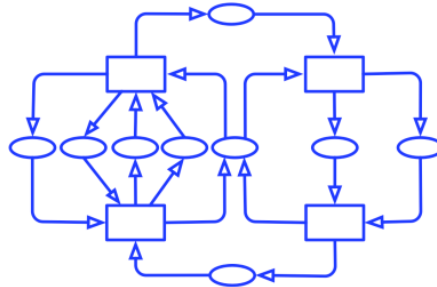
His research interests are in the area of performance evaluation of computer systems, queueing networks, stochastic Petri nets, and queueing theory. He is one of the proposers of the Generalized Stochastic Petri Net (GSPN) formalism that he developed while conducting research on the performance of parallel computers. Recently he extended his studies to the modelling aspects of Systems Biology using Stochastic Petri Nets and their associated mathematical methods. The results of his activity are published in more than 100 conference and journal papers and in 10 books (as author or editor). Besides his research and teaching activities with University of Torino, Gianfranco Balbo played organizational and advisory roles in several Institutions among which the Consortium for the Information System of Piemonte Italy) and the Computational Biology Research Centre of Microsoft and Trento University.

Gianfranco Balbo is an ISI highly cited researcher, member of the Academy of Sciences of Torino), and "Commendatore" of the Italian Republic in honor of his scientific achievements.



Program

40 years of Petri Net Conferences



Javier Esparza

Technische Universität München



Short biography:

Javier Esparza holds the Chair for Foundations of Software Reliability and Theoretical Computer Science at the Technische Universität München. He has co-authored two books and over 175 scientific papers in the fields of automatic program verification, program analysis, concurrency theory, and automata theory. Javier Esparza has made numerous contributions to the theory Petri nets, and was one of the initiators of the unfolding approach to model checking, the automata-theoretic approach to software model checking, and the verification of infinite-state systems. More recently he has conducted research on the fundamentals of program analysis and the verification of parameterized and stochastic systems. Javier Esparza received a honorary doctorate in Informatics from the Masaryk University of Brno in 2009, is member of Academia Europaea since 2011, and received an ERC Advanced Grant in 2018.

Fabrice Kordon

Sorbonne University

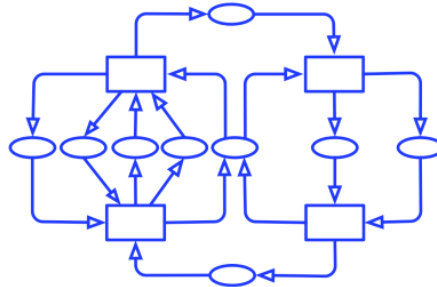
Short biography:

Prof. Fabrice Kordon is a full professor at Sorbonne Université. After having led the Modeling and Verification research team, for 15 years, he is now the director of LIP6, the Computer science research institute of Sorbonne Université. His research interest are related to distributed systems, software engineering and formal methods. He aims at providing verification tools dedicated to distributed systems and usable by engineers with little knowledge of the underlying techniques. In particular, he explored several techniques to increase the efficiency of model checking engines : intensive exploitation of symmetries in systems, various types of decision diagrams (and automated saturation), new classes of automata (Transition based Generalized Testing Automata), etc. More recently he also focused his interested in the use of SAT solvers in the context of bounded model checking by investigating several techniques to speed up their execution : parallelization and exploitation of symmetries or other structural properties in the input CNF. He founded in 2011 the Model Checking Contest, that is now a key event for the community.no), and "Commendatore" of the Italian Republic in honor of his scientific achievements.



Program

40 years of Petri Net Conferences



Jetty Kleijn (Chair)

Leiden University



Short biography:

Jetty Kleijn is an associate professor at the Leiden Institute of Advanced Computer Science (LIACS) of Leiden University, the Netherlands, and a long time visiting fellow of the School of Computing of Newcastle University, UK. In 2015 she was a visiting professor at the Faculty of Mathematics and Computer Science of Nicolaus Copernicus University, Torun, Poland. She is the head of the Theory Group of LIACS and is also affiliated with LIACS' Bioinformatics Group.

Her research areas are theory of concurrency, bio-inspired computing and the modelling of biological systems, and theory of automata and formal languages. Currently, her research focuses on the modeling of concurrent and distributed systems with understanding and capturing concurrency phenomena in the behaviour of such systems as its underlying aim. Petri nets provide a suitable framework for this research but other models are also considered. Themes are causality, order structures, formal models inspired by biochemical processes, modeling of biological processes, and composition of and collaboration in multi-component systems.

Jetty Kleijn is also a member of the Steering Committee for the annual Petri Net conferences, an associate editor of the LNCS Transactions on Petri Nets and Other Models of Concurrency, and an editor of Fundamenta Informaticae.

P.S. Thiagarajan

Harvard Medical School / University of Pittsburgh



Short biography:

P.S. Thiagarajan received a B.Tech from the Indian Institute of Technology, Madras (1970) and a PhD from Rice University, Houston (1973). He has held academic positions at MIT, Cambridge, GMD, St. Augustin, Aarhus University, The Institute of Mathematical Sciences, Chennai, the Chennai Mathematical Institute and the National University of Singapore (NUS). After retiring from NUS (2015), he spent 3 years at the Laboratory of Systems Pharmacology, Harvard Medical School as a visiting professor. He is currently a senior research scientist at the Department of computational and systems biology, University of Pittsburgh.

Over the years, his research interests have ranged over Petri nets, concurrency theory, temporal logics, controller synthesis, real-time embedded systems, hybrid automata and probabilistic dynamical systems. During the past 10 years, his main focus has been computational systems biology.

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The Process and Data Science (PADS) group, headed by Prof. Wil van der Aalst, is one of the research units in the Department of Computer Science of RWTH Aachen. The scope of PADS includes all activities where discrete processes are analyzed, reengineered, and/or supported in a data-driven manner. Process-centricity is combined with an array of Data Science techniques. The main research focus is on Process Mining (including process discovery, conformance checking, performance analysis, predictive analytics, operational support, and process improvement). This is combined with neighboring disciplines such as operations research, concurrency theory, stochastics, discrete event simulation, business process management, responsible data science, robotic process automation, and traditional workflow automation. The group works closely with the process mining group in the Fraunhofer-Institut für Angewandte Informationstechnik (FIT) and is interested in collaborative projects. Visit or contact us via <http://www.pads.rwth-aachen.de> and office@pads.rwth-aachen.de.

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