



SPLC 2019

9 – 13 September, 2019

**23rd International Systems &
Software Product Line Conference**

FIAP JEAN MONNET PARIS

<https://splc2019.net>



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A conference badge is handed over to you as soon as you have registered at the registration desk. **Please, keep the badge visible all the time** during the conference, workshops, and social events.

Welcome message



Welcome to SPLC 2019, the 23rd International Systems and Software Product Line Conference. Product lines represent one of the most exciting paradigm shifts in software and systems development, with new challenges and opportunities for both research and practice. For 23 years, SPLC has been the meeting ground for practitioners, researchers, and educators interested in systems and software product lines. SPLC 2019 took place from September 9th to 13th, 2019 in the vibrant city of Paris.

For the first time, we co-located SPLC with ECSA, the 13th European Conference on Software Architecture. We gave the opportunity to participants of both conferences to meet in Paris around a set of common events including two joint keynotes and a common doctoral symposium. Furthermore, we organized a joint panel on Women in Software Engineering, which provided a forum for discussions on how to achieve more diversity in software engineering.

SPLC 2019 includes a highly selective program of research and industry papers, accompanied by workshops, demonstrations, tutorials, and keynote speeches. In addition, many recent excellent tools used in research and industry will be shown in the tool demo track, and many new ideas will be discussed during the doctoral symposium, workshops and tutorials tracks.

We would like to thank our keynote speakers Christian Kästner, Lidia Fuentes, Björn Engelmann, Daniel Le Berre, Carlo Ghezzi, who graciously agreed to share their perspectives, experiences, and insights with the community. The program committee members and track chairs deserve a mention for their hard work in reviewing and discussing the papers. Our thanks also for the local organizing team whose efforts were instrumental for ensuring the success of the conference.

Finally, we would like to thank our sponsors and institutional partners for their support and contributions. These include LIP6 - Sorbonne University, Centre de Recherche en Informatique (CRI), University of Paris 1 Pantheon Sorbonne, pure-systems GmbH, and BigLever Software Inc.

During your stay, you will be able not only to attend the scientific program but also to enjoy the beautiful city of Paris. In Paris, you will find a huge cultural and environmental heritage and a lively and modern city as well as extraordinary people that will surely make your stay highly pleasant. If you have the opportunity to visit other places in Paris area, you will discover the diversity of this wonderful place.

Sincerely,

Camille SALINESI and Tewfik ZIADI, general chairs of SPLC 2019.

Program at a glance

SPLC'19 Pre-Conference Program

| | Room Java | Dublin/Rome Monday 9th | Rome/Amsterdam | Room Java | Room Vienne Tuesday 10th | Room Madrid |
|---------------|--------------|---------------------------|----------------|-----------|-----------------------------|-------------|
| 8:30 - 9:00 | | Registration | | | Registration | |
| 9:00 - 10:30 | VariVolution | WEERSR | Tutorial T1 | MODEVAR | REVE | Tutorial T5 |
| 10:30 - 11:00 | | Coffee Break | | | Coffee Break | |
| 11:00 - 12:30 | VariVolution | WEERSR | Tutorial T1 | MODEVAR | REVE | Tutorial T5 |
| 12:30 - 2:00 | | Lunch | | | Lunch | |
| 2:00 - 3:30 | VariVolution | SPLTea | Tutorial T4 | MODEVAR | Tutorial T6 | Tutorial T7 |
| 3:30 - 4:00 | | Coffee Break | | | Coffee Break | |
| 4:00 - 5:30 | Tutorial T2 | SPLTea | Tutorial T3 | MODEVAR | Tutorial T6 | Tutorial T7 |

| |
|---|
| T1: Hugo Martin, Juliana Alves Pereira, Paul Temple and Mathieu Acher. Machine Learning and Configurable Systems: A Gentle Introduction |
| T2: Mike Mannion and Hermann Kaindl. Software Reuse and Mass Customisation |
| T3: Klaus Schmid, Holger Eichelberger and Sascha Eil-Sharkawy. Variability Modeling and Implementation with EASY-Producer |
| T4: Juha-Pekka Tolvanen and Steven Kelly. Describing Variability with Domain-Specific Languages and Models |
| T5: Maxime Cordy and Sami Lazreg. Automated Evaluation of Embedded-System Design Alternatives |
| T6: Paul Clements and Charles Krueger. Feature-based Systems and Software Product Line Engineering: PLE for the Enterprise |
| T7: Aitor Arrieta. Variability Modeling and Management of MATLAB/Simulink Models |

SPLC'19 Main Program

| | Room Bruxelles | Room Oslo | Stockholm/Budapest | Room Bruxelles | Room Oslo | Room Bruxelles | Room Oslo |
|---------------|--------------------------------------|------------------------------|--|---|---|---------------------------------|---------------|
| | Wednesday 11th | | | Thursday 12th | | Friday 13th | |
| 8:30 - 9:00 | | Registration | | Registration | | Registration | 8:30 - 9:00 |
| 9:00 - 10:30 | Opening for SPLC and ECSA | | | ECSA/SPLC Keynote: Lidia Fuentes | | SPLC Keynote: Björn Engelmann | 9:00 - 10:00 |
| | SPLC/ECSA Keynote: Christian Kästner | | | ECSA/SPLC Teaser for Tool Demos and Posters | | Short Coffee Break | 10:00 - 10:15 |
| 10:30 - 11:00 | Coffee Break | | | Coffee Break / Interactive Tables | | S11: Configuration and Sampling | 10:15 - 11:15 |
| 11:00 - 12:30 | S1: Testing | S2: Domain Implementation | ECSA/SPLC Doctoral Symposium | Most-Influential Paper Award | S8: Tool Demonstrations | Short Coffee Break | 11:15 - 11:30 |
| | | | | S7: Requirements Engineering | | SPLC Keynote: Daniel Le Berre | 11:30 - 12:30 |
| 12:30 - 2:00 | Lunch | | | Lunch | | Closing for SPLC | 12:30 - 1:00 |
| 2:00 - 3:30 | S3: Solution-Space Analysis | S4: Challenges and Solutions | ECSA/SPLC Doctoral Symposium Keynote: Carlo Ghezzi | S9: Metrics and Refactoring | SPLC/ECSA WSE TRACK | | 1:00 - 2:00 |
| | | | ECSA/SPLC Doctoral Symposium | | | Lunch | |
| 3:30 - 4:00 | Coffee Break | | | Coffee Break / Interactive Tables | | | |
| 4:00 - 5:30 | S5: Emerging Application Areas | S6: Community Efforts | ECSA/SPLC Doctoral Symposium | S10: Feature-Model Evolution | SPLC/ECSA Women in Software Engineering Panel | | |
| | | | | Buses leave FIAP at 5:30 | | | |
| 5:30 - 6:00 | SPLC Townhall Meeting | | | 5:30- 11:00 City Tour + Gala Dinner | | | |
| | 6:00 - 7:00 Welcome Reception | | | | | | |

Keynotes

Christian Kästner (Joint keynote for SPLC and ECSA)

Performance analysis for highly-configurable systems.

Wed, 11 Sept – 9:30 am



Almost every modern software system is highly configurable with dozens or more options to customize behavior for different use cases. Beyond enabling or disabling optional functionality, configuration options often adjust tradeoffs among accuracy, performance, security, and other qualities. However, with possible interactions among options and an exponentially exploding configuration space, reasoning about the impact of configurations is challenging. Which options affect performance or accuracy? Which options interact? What's the optimal configuration for a given workload? In this talk, I will give an overview of different strategies and challenges to learn performance models from highly-configurable systems by observing their behavior in different configurations, looking at sampling and learning strategies, transfer learning strategies, and strategies that analyze the internals or architecture of the system.

<https://www.cs.cmu.edu/~ckaestne/>

Carlo Ghezzi (Joint keynote for SPLC and ECSA doctoral symposium)

Becoming and being a researcher –

What I wish someone would have told me when I started doing research.

Wed, 11 Sept – 2:00 pm



Carlo Ghezzi is an ACM Fellow (1999), an IEEE Fellow (2005), a member of the European Academy of Sciences and of the Italian Academy of Sciences. He received the ACM SIGSOFT Outstanding Research Award (2015) and the Distinguished Service Award (2006). He has been President of Informatics Europe. He has been a member of the program committee of flagship conferences in the software engineering field, such as the ICSE and ESEC/FSE, for which he also served as Program and General Chair. He has been the Editor in Chief of the ACM Trans. on Software Engineering and Methodology and an associate editor of and IEEE Trans. on Software Engineering, Communications of the ACM and Science of Computer Programming, and Computing. Ghezzi's research has been mostly focusing on different aspects of software engineering. He co-authored over 200 papers and 8 books. He coordinated several national and international research projects. He has been the recipient of an ERC Advanced Grant.

<http://home.deib.polimi.it/ghezzi/>

Lidia Fuentes (Joint keynote for SPLC and ECSA)

Variability variations in cyber-physical systems.

Thu, 12 Sept – 9:00 am



With the increasing size and heterogeneity of systems (e.g., IoT, Cyber-Physical Systems) and enhanced power and versatility of IoT devices (e.g., smart watches, home intelligence sensors), the complexity of managing different kinds of variability for a given vertical domain becomes more difficult to handle. The structural variability of cyber-physical systems becomes more complex, comprising not only the inherent hardware variability of IoT devices and their network access protocols, but also the infrastructure variability derived from modern virtualization technologies, such as microcontainers or unikernels. Variability of software frameworks used to develop domain specific applications and/or services for Cloud/Edge computing environments should not be intermingled with hardware, and infrastructure variability modelling. In addition, to exploit the full potential of flexibility in processing, data storage and networking resource management, experts should define dynamic configuration processes that optimize QoS such as energy efficiency or latency respecting application-specific requirements. In this keynote talk, I will present how QoS assurance in cyber-physical systems implies modelling and configuring different kinds of variability during design, but also at runtime (e.g., user demands, usage context variability), enabling the late binding of dynamic variation points, distributed in IoT/Edge/Cloud devices, and how this can be materialized using current SPL artefacts.

<http://www.lcc.uma.es/~lff/>

Björn Engemann

DSLs, formal methods and feature models.

Fri, 13 Sept – 9:00 am



At the core of Model-driven development, there is the idea of generalizing software development processes and tools to arbitrary domains. To this end, Domain-Specific Languages (DSLs) provide the intellectual tooling necessary for said domains and language workbenches like JetBrains MPS allow lifting the tooling invented and developed for programming languages to these DSLs. Formal Methods represent the most powerful tooling ever developed for tackling complex problems. Originally intended for Software Engineers, these tools today find a wide range of applications across different domains ranging from mathematics to biochemistry. Integrating Formal Methods into DSLs contributes to this development and makes the tooling for tackling complex problems available to practitioners in domains other than Software Engineering. Feature Models and their Configurations provide the intellectual tooling for the domain of Variability. At my last employer, me and my team developed a Variability DSL based on MPS thus allowing the application of the advanced tool support known from Software Development to Feature Modelling. In particular, it becomes possible to automatically ensure various properties of the models and configurations using the SMT solver Z3. In this talk I would like to share some insights gained from the development of said tooling as well as from its application to real-world feature models.

Daniel Le Berre

SAT oracles, for NP-Complete problems and beyond.

Fri, 13 Sept – 11:30 am



SAT solvers have been used in many areas, including software product line, as generic engine to solve NP-complete problems since the 2000's. While the raw performances of the solvers to tackle NP-complete problems have been increasing steadily in the past, most impressive recent results rely on sophisticated encodings and better interaction with the solver, allowing to solve NP-hard – and even PSPACE-complete – problems. This is the case for core-based MAXSAT solvers for instance, and more recently SAT-based QBF solvers. In this talk, I will review the current features found in modern SAT solvers, and how they are used to solve NP-hard problems. I will present a generic approach called RECAR (Recursive Explore and Check Abstraction Refinement) which allows to take advantage of the feedback of the SAT solver to drive the search on a subproblem to prevent when possible memory blowup.

<http://www.cril.univ-artois.fr/~leberre/>

Workshops



1st International Workshop on Languages for Modeling Variability (MODEVAR)

David Benavides, Rick Rabiser, Don Batory, and Mathieu Acher

Tue, 10 Sept – 9:00 am / Room Java

Feature models were invented in 1990 and have been recognized as one of the main contributions to the Software Product Line community. Although there have been several attempts to establish and study a sort of standard variability modelling language (OVM, CVL, TVL,..) there is still no consensus on a simple feature modelling language. There can be many motivations to have one but among others, there is one that is very important: information sharing among researchers, tools or developers. This first international workshop plans to be an interactive event where all participants shall share knowledge about how to build up a simple feature model language that all the community can agree on.

<https://modevar.github.io/>

7th International Workshop on Reverse Variability Engineering (REVE)

Mathieu Acher, Tewfik Ziadi, Roberto E. Lopez-Herrejon, and Jabier Martinez

Tue, 10 Sept – 9:00 am / Room Vienne

Software Product Line (SPL) migration remains a challenging endeavour. From organizational issues to purely technical challenges, there is a wide range of barriers that complicates SPL adoption. This workshop aims to foster research about making the most of the two main inputs for SPL migration: 1) domain knowledge and 2) legacy assets. Domain knowledge, usually implicit and spread across an organization, is key to define the SPL scope and to validate the variability model and its semantics. At the technical level, domain expertise is also needed to create or extract the reusable software components. Legacy assets can be, for instance, similar product variants (e.g., requirements, models, source code etc.) that were implemented using ad-hoc reuse techniques such as clone-and-own. More generally, the workshop REverse Variability Engineering (REVE) attracts researchers and practitioners contributing to processes, techniques, tools, or empirical studies related to the automatic, semi-automatic or manual extraction or refinement of SPL assets.

<http://reveworkshop.github.io/2019/>

4th International Workshop on Software Product Line Teaching (SPLTea)

Mathieu Acher, Rick Rabiser, and Roberto E. Lopez-Herrejon

Mon, 9 Sept – 2:00 pm / Room Dublin/Rome

Education has a key role to play for disseminating the constantly growing body of Software Product Line (SPL) knowledge. In a sense, every researcher in SPL should think about how to teach SPL. This workshop aims to explore and explain the current status and ongoing work on teaching SPLs at universities, colleges, and in industry (e.g., by consultants). This fourth edition will continue the effort made at SPLTea'14, SPLTea'15 and SPLTea'18. In particular we seek to better understand how to build a curriculum for teaching SPLs – a central issue as reported in surveys and as informally discussed at SPLTea'18. We expect several lightning talks that report on traditional questions like: what is the targeted audience? What is the place in the curriculum? What is the material (slides, tools, books, etc) used? As there is hardly a one-size-fits-all curriculum, the workshop aims to collectively identify commonality and

variability when building SPL curriculums. As a concrete outcome, we expect to elaborate a variability model of SPL teaching that could be actuated to derive custom curriculum in various contexts.

<http://spltea.irisa.fr>

2nd International Workshop on Variability and Evolution of Software-Intensive Systems (VariVolution)

Michael Nieke, Lukas Linsbauer, Jacob Krüger, and Thomas Leich

Mon, 9 Sept – 9:00 am / Room Java

Modern software systems are subject to continuous change and often need to exist in many variants addressing different requirements. Yet, software versions resulting from evolution in time (revisions) and variants resulting from evolution in space are managed radically differently, but none of the traditional technologies have been successful in effectively supporting unified revision and variant management in practice. Recently, several research activities have focused on the integrated management of evolution and variability. Existing approaches stem from multiple origins, most notably from the fields of software configuration management and software product line engineering, but also from, for example, software modularity and software architecture. For instance, variation control systems adopt a holistic view on software evolution in time and space with the ultimate goal of systematically managing software revisions and variants. VariVolution (the 2nd International Workshop on Variability and Evolution of Software-intensive Systems) aims at bringing together active researchers studying software evolution and variability from different angles as well as practitioners who encounter these phenomena in real-world applications and systems. The workshop offers a platform for exchanging new ideas and fostering future research collaborations and synergies.

<https://sites.google.com/view/varivolution2019>

Tutorials

T1: Machine Learning and Configurable Systems: A Gentle Introduction.

Hugo Martin, Juliana Alves Pereira, Paul Temple, and Mathieu Acher

Mon, 9 Sept – 9:00 am / Room Rome/Amsterdam

The goal of this tutorial is to give an introduction to how machine learning can be used to support activities related to the engineering of configurable systems and software product lines. To the best of our knowledge, this is the first practical tutorial in this trending held. The tutorial is based on a systematic literature review and includes practical tasks (specialization, performance prediction) on real-world systems (VaryLaTeX, x264).

T2: Software Reuse and Mass Customisation

Mike Mannion and Hermann Kaindl

Mon, 9 Sept – 4:00 pm / Room Java

This tutorial explores the impact of the socio-economic trends of mass customization on software reuse through software product line development.

T3: Variability Modeling and Implementation with EASy- Producer

Klaus Schmid, Holger Eichelberger, and Sascha El- Sharkawy

Mon, 9 Sept – 4:00 pm / Room Rome/Amsterdam

EASy-Producer is an open-source research toolset for engineering product lines, variability-rich software ecosystems, and dynamic software product lines. In this tutorial, we will introduce its (textual) variability modeling capabilities realized by the Integrated Variability Modeling Language (IVML) and its model-based development and implementation capabilities, which are realized by the Variability Instantiation Language (VIL) and the Variability Template Language (VTL).

~~T4: Describing Variability with Domain-Specific Languages and Models[†]~~

Juha-Pekka Tolvanen and Steven Kelly

Mon, 9 Sept – 2:00 pm / Room Rome/Amsterdam

This tutorial will teach participants about domain-specific languages and models, where they can best be used (and where not), and how to apply them effectively to improve the speed and quality of product development within a product line.

T5: Evaluation of Embedded-System Design Alternatives

Maxime Cordy and Sami Lazreg

Tue, 10 Sept – 9:00 am / Room Madrid

This half-day tutorial presents a method to tackle the issue of evaluating a plethora of embedded system design-alternatives against functional and non-functional requirements. Our method results from a joint research project between three universities and Visteon Electronics, a multinational company active in the engineering of automotive embedded systems. We will illustrate its application on a real-world application and, first and foremost, under a practical prism. As such, practitioners developing embedded systems are invited to discover the capabilities of our techniques and tools, as well as insights on how to integrate them

[†] Cancelled

into their engineering processes. Moreover, researchers will get a comprehensive picture of the underlying techniques and the challenges that remain ahead.

T6: Feature-based Systems and Software Product Line Engineering: PLE for the Enterprise

Paul Clements and Charles Krueger

Tue, 10 Sept – 2:00 pm / Room Vienne

This tutorial introduces a product line engineering solution, including tools and methods, that is the subject of an upcoming ISO standard and known as “FeatureBased Systems and Software Product Line Engineering.” This tutorial will explain the approach, give its history and a brief summary of some of its many successes, and discuss its application to systems and software engineering. Moreover, the tutorial will cover how its usage is spreading beyond the traditional engineering realm, across the entire enterprise in areas such as product marketing, portfolio planning, manufacturing, supply chain management, product service and maintenance, and much more.

T7: Variability Modeling and Management of MATLAB/Simulink Models

Aitor Arrieta

Tue, 10 Sept – 2:00 pm / Room Madrid

MATLAB/Simulink models are widely used in industry to model and simulate complex systems in several domains (e.g., automotive). These complex systems are produced in mass, and often, clients demand different functionalities. As a result, the variability of these models needs to be often considered. This tutorial aims at showing different variability modeling alternatives for MATLAB/Simulink users.

Main Conference Sessions

Volume A



S1: Testing (Wednesday, 11th Sept)

Room Bruxelles

Chair: Thomas. Fogdal

| Paper | Authors | QR Code | Schedule |
|---|--|---------|----------|
| Automating Test Reuse for Highly Configurable Software | S. Fischer, R. Ramler, L. Linsbauer, A. Egyed | | 11:00 am |
| Mutation Operators for Feature-Oriented Software Product Lines | J. Krüger, M. Al-Hajjaji, T. Leich, G. Saake | | 11:23 am |
| Extended Abstract of "Spectrum-Based Fault Localization in Software Product Lines" | A. Arrieta, S. Segura, U. Markiegi, G. Sagardui, L. Etxeberria | | 11:45 am |
| Applying Product Line Testing for the Electric Drive System | R. Ebert, J. Jolianis, S. Kriebel, M. Markthaler, B. Pruenster, B. Rumpe, K. S. Salman | | 12:07 pm |

S2: Domain Implementation (Wednesday, 11th Sept)

Room Oslo

Chair: Roberto Lopez-Herrejon

| Paper | Authors | QR Code | Schedule |
|---|--|---------|----------|
| Feature-Oriented Contract Composition | T. Thüm, A. Knüppel, S. Krüger, S. Bolle, I. Schaefer | | 11:00 am |
| Extraction of Configurable and Reusable Microservices from Legacy Systems: An Exploratory Study | L. Carvalho, A. Garcia, W. K. G. Assunção, R. Bonifácio, L. P. Tizzei, T. E. Colanzi | | 11:23 am |
| Journal First Presentation of a Comparative Study of Workflow Customization Strategies: Quality Implications for Multi-Tenant SaaS | M. Makki, D. Van Landuyt, B. Lagaisse, W. Joosen | | 11:45 am |
| App Variants and Their Impact on Mobile Architecture: An Experience Report | M. Dahlem, R. Rahm, M. Becker | | 12:07 pm |

S3: Solution-Space Analysis (Wednesday, 11th Sept)

Room Bruxelles








Chair: Xhevahire Tërnavá

| Paper | Authors | QR Code | Schedule |
|---|--|--|----------|
| Static Analysis of Featured Transition Systems | M. H. ter Beek, F. Damiani, M. Lienhardt, F. Mazzanti, L. Paolini |  | 02:00 pm |
| Learning from Difference: An Automated Approach for Learning Family Models from Software Product Lines | C. D. N. Damasceno, M. R. Mousavi, A. Simao |  | 02:23 pm |
| Feature-Family-Based Reliability Analysis of Software Product Lines | A. Lanna, T. Castro, V. Alves, G. Rodrigues, P-Y. Schobbens, S. Apel |  | 02:45 pm |
| Variability-Aware Semantic Slicing Using Code Property Graphs | L. Gerling, K. Schmid |  | 03:07 pm |

S4: Challenges and Solutions (Wednesday, 11th Sept)

Room Oslo



Chair: Timo Kehrer

| Paper | Authors | QR Code | Schedule |
|---|--|--|----------|
| Applying Product Line Engineering Concepts to Deep Neural Networks | J. Ghofrani, E. Kozegar, A. L. Fehlhaber, M. D. Soorati |  | 01:30 pm |
| Product Sampling for Product Lines: The Scalability Challenge | T. Pett, T. Thüm, T. Runge, S. Krieter, M. Lochau, I. Schaefer |  | 01:47 pm |
| t-wise Coverage by Uniform Sampling | J. Oh, P. Gazzillo, D. Batory |  | 02:04 pm |
| A Graph-Based Feature Location Approach Using Set Theory | R. Müller, U. Eisenecker |  | 02:21 pm |
| Comparison-Based Feature Location in ArgoUML Variants | G. K. Michelon, L. Linsbauer, W. K. G. Assunção, A. Egyed |  | 02:38 pm |
| Migrating Java-Based Apo-Games into a Composition-Based Software Product Line | J. Debbiche, O. Lignell, J. Krüger, T. Berger |  | 02:55 pm |
| Migrating the Android Apo-Games into an Annotation-Based Software Product Line | J. Åkesson, S. Nilsson, K. Krüger, T. Berger |  | 03:12 pm |

S5: Emerging Application Areas (Wednesday, 11th Sept)

Room Bruxelles





Chair: Laurence Duchien

| Paper | Authors | QR Code | Schedule |
|--|--|--|----------|
| DNA as Features: Organic Software Product Lines | M. Cashman, J. Firestone, M. B. Cohen, T. Thianniwet, W. Niu |  | 04:00 pm |
| Automated Search for Configurations of Convolutional Neural Network Architectures | S. Ghamizi, M. Cordy, M. Papadakis, Y. Le Traon |  | 04:23 pm |
| Piggyback IDE Support for Language Product Lines | T. Kühn, W. Cazzola, N. P. Giampietro, M. Poggi |  | 04:45 pm |
| Industrial Perspective on Reuse of Safety Artifacts in Software Product Lines | C. Wolschke, M. Becker, S. Schneickert, R. Adler, J. MacGregor |  | 05:07 pm |

S6: Community Efforts (Wednesday, 11th Sept)

Room Oslo



Chair: Maurice H. ter Beek

| Paper | Authors | QR Code | Schedule |
|--|---|--|----------|
| How Domain-Specific Modeling Languages Address Variability in Product Line Development: Investigation of 23 Cases | J-P. Tolvanen, S. Kelly |  | 04:00 pm |
| Software Product Line Engineering: A Practical Experience | J-M. Horcas, M. Pinto, L. Fuentes |  | 04:23 pm |
| Facing the Truth: Benchmarking the Techniques for the Evolution of Variant-Rich Systems | D. Strüber, M. Mukelabai, J. Krüger, S. Fischer, L. Linsbauer, J. Martinez, T. Berger |  | 04:45 pm |
| Industrial and Academic Software Product Line Research at SPLC: Perceptions of the Community | R. Rabiser, K. Schmid, M. Becker, G. Botterweck, M. Galster, I. Groher, D. Weyns |  | 05:07 pm |

S7: Requirements Engineering (Thursday, 12th Sept)

Room Bruxelles





Chair: Rick Rabiser

| Paper | Authors | QR Code | Schedule |
|---|--|--|----------|
| Feature Oriented Refinement from Requirements to System Decomposition: Quantitative and Accountable Approach | M. Asano, Y. Nishiura, T. Nakanishi, K. Fujiwara |  | 11:45 am |
| Enabling Automated Requirements Reuse and Configuration | Y. Li, T. Yue, S. Ali, L. Zhang |  | 12:08 pm |

S9: Metrics and Refactoring (Thursday, 12th Sept)

Room Bruxelles




Chair: Tewfik Ziadi

| Paper | Authors | QR Code | Schedule |
|---|---|--|----------|
| Formal Foundations for Analyzing and Refactoring Delta-Oriented Model-Based Software Product Lines | C. Pietsch, U. Kelter, T. Kehrer, C. Seidl |  | 02:00 pm |
| Covert and Phantom Features in Annotations: Do They Impact Variability Analysis? | K. Ludwig, J. Krüger, T. Leich |  | 02:23 pm |
| Identifying and Visualizing Variability in Object-Oriented Variability-Rich Systems | X. Těrnava, J. Mortara, P. Collet |  | 02:45 pm |
| Metrics for Analyzing Variability and Its Implementation in Software Product Lines: A Systematic Literature Review | S. El-Sharkawy, N. Yamagishi-Eichler, K. Schmid |  | 03:07 pm |

S10: Feature-Model Evolution (Thursday, 12th Sept)

Room Bruxelles




Chair: Christoph Seidl

| Paper | Authors | QR Code | Schedule |
|--|---|--|----------|
| Semantic Evolution Analysis of Feature Models | I. Drave, O. Kautz, J. Michael, B. Rumpe |  | 04:00 pm |
| Achieving Change Requirements of Feature Models by an Evolutionary Approach | P. Arcaini, A. Gargantini, M. Radavelli |  | 04:25 pm |
| Foundations of Collaborative, Real-Time Feature Modeling | E. Kuitert, S. Krieter, J. Krüger, T. Leich, G. Saake |  | 04:50 pm |

S11: Configuration and Sampling (Friday, 13th Sept)

Room Bruxelles




Chair: Lukas Linsbauer

| Paper | Authors | QR Code | Schedule |
|---|---|--|----------|
| Process Mining to Unleash Variability Management: Discovering Configuration Workflows Using Logs | A. J. Varela-Vaca, J. A. Galindo, B. Ramos-Gutiérrez, M. T. Gómez-López, D. Benavides |  | 10:15 am |
| Towards Quality Assurance of Software Product Lines with Adversarial Configurations | P. Temple, M. Acher, G. Perrouin, B. Biggio, J-M. Jezequel, F. Roli |  | 10:35 am |
| Uniform Random Sampling Product Configurations of Feature Models That Have Numerical Features | D-J. Munoz, J. Oh, M. Pinto, L. Fuentes, D. Batory |  | 10:55 am |

S12: Problem-Space Analysis (Friday, 13th Sept)

Room Oslo

Chair: Mathieu Acher

| Paper | Authors | QR Code | Schedule |
|---|---|--|----------|
| Automated Analysis of Feature Models: Quo Vadis? | J.A. Galindo, D. Benavides, P. Trinidad, A-M. Gutiérrez-Fernández, A. Ruiz-Cortés |  | 10:15 am |
| A Kconfig Translation to Logic with One-Way Validation System | D. Fernandez-Amoros, R. Heradio, C. Mayr-Dorn, A. Egyed |  | 10:35 am |
| Using Relation Graphs for Improved Understanding of Feature Models in Software Product Lines | S. Duszynski, S. J. Dhar, T. Beichter |  | 10:55 am |



S8: Demonstrations and Tools (Thursday, 12th Sept)

Room Oslo

Chair: Leopoldo Teixeira

| Paper | Authors | QR Code | Schedule |
|---|--|--|----------|
| Visualization of Feature Locations with the Tool FeatureDashboard | S. Entekhabi, A. Solback, J-P. Steghöfer, T. Berger |  | 11:00 am |
| symfinder: A Toolchain for the Identification and Visualization of Object-Oriented Variability Implementations | J. Mortara, X. Těrnava, P. Collet |  | 11:08 am |
| FlexiPLE: A Tool for Flexible Binding Times in Annotated Model-Based SPLs | D. Reuling, C. Pietsch, U. Kelter, M. Ohrndorf |  | 11:16 am |
| HADAS: Analysing Quality Attributes of Software Configurations | D-J. Munoz, M. Pinto, L. Fuentes |  | 11:24 am |
| Change Analysis of #if-def Blocks with FeatureCloud | O. Diaz, R. Medeiros, L. Montalvillo |  | 11:32 am |
| Understanding Conditional Compilation through Integrated Representation of Variability and Source Code | D. Baum, C. Sixtus, L. Vogelsberg, U. Eisenecker |  | 11:40 am |
| MetricHaven: More than 23,000 Metrics for Measuring Quality Attributes of Software Product Lines | S. El-Sharkawy, A. Krafczyk, K. Schmid |  | 11:48 am |
| Applying the QuARS Tool to Detect Variability | A. Fantechi, S. Gnesi, L. Semini |  | 11:56 am |
| RESDEC: Online Management Tool for Implementation Components Selection in Software Product Lines Using Recommender Systems | J. Rodas-Silva, J. A. Galindo, J. García-Gutiérrez, D. Benavides |  | 12:04 pm |
| Industrial Variant Management with pure::variants | D. Beuche |  | 12:12 pm |
| Applying Domain-Specific Languages in Evolving Product Lines | J-P. Tolvanen, S. Kelly |  | 12:20 pm |
| Feature-Based Systems and Software Product Line Engineering with Gears from BigLever | C. Krueger, P. Clements |  | 12:28 pm |

Organization

General Chairs



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Sorbonne University
France



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Anas Shatnawi
Sorbonne University
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Thùy Dodo
Sorbonne University
France

Venue

The conference takes place at FIAP Jean Monnet conference center, located at **30 rue Cabanis, 75014 Paris**.

www.fiap.paris



Wireless network

To be connected to the FIAP wireless network named **WIFIAP18**:

Id: **WIFIAP18**

Password: **internet**

You must create an account.

Rooms

| Floor | Rooms |
|-----------------------|--------------------|
| 8 th floor | Vienne |
| 7 th Floor | Java |
| 1 st floor | Amsterdam |
| | Bonn |
| | Dublin |
| | Madrid |
| | Rome |
| | Restaurant |
| | Espace Jean Monnet |
| Ground floor | Welcome desk |
| | Hall |
| | Self-service |
| Basement | Bruxelles |
| | Lisbonne |
| | Oslo |
| | Stockholm |

| | |
|--|------------|
| | Budapest |
| | Copenhagen |
| | Athènes |

Coffee Breaks

On **Monday, Tuesday, and Friday**, the coffee breaks for SPLC will be only served in the Hall (Ground floor).

On **Wednesday and Thursday**, SPLC will share coffee breaks with ESCA conference in the Hall (Ground floor) and Espace Jean Monnet (1st floor).

On **Thursday, 12th Sept:**

- During the morning coffee break (10:30 – 11:00 am) the interactive tables will be located in room **Oslo**.
- During the afternoon break, (3:30 – 4:00 pm) the interactive tables will be located in room **Copenhagen**.

In case of unforeseen further changes, the new rooms will be announced on site.

Lunches

For SPLC, lunch will be served according to the following:

- **Monday and Tuesday:** Self-Service for all participants (Ground Floor)
- **Wednesday:** Restaurant for all SPLC participants (1st floor)
- **Thursday:** Depending on your ticket, either restaurant or the self-service
- **Friday:** Self-Service for all participants (Ground Floor)

Social Event

Welcome reception

SPLC will serve a tasty cocktail to the attendees with a variety of appetizers and drinks. This cocktail will be held on **Wednesday, 11th September at 06:30 pm** in the hall of the FIAP building.

Paris City Tour & Gala Dinner

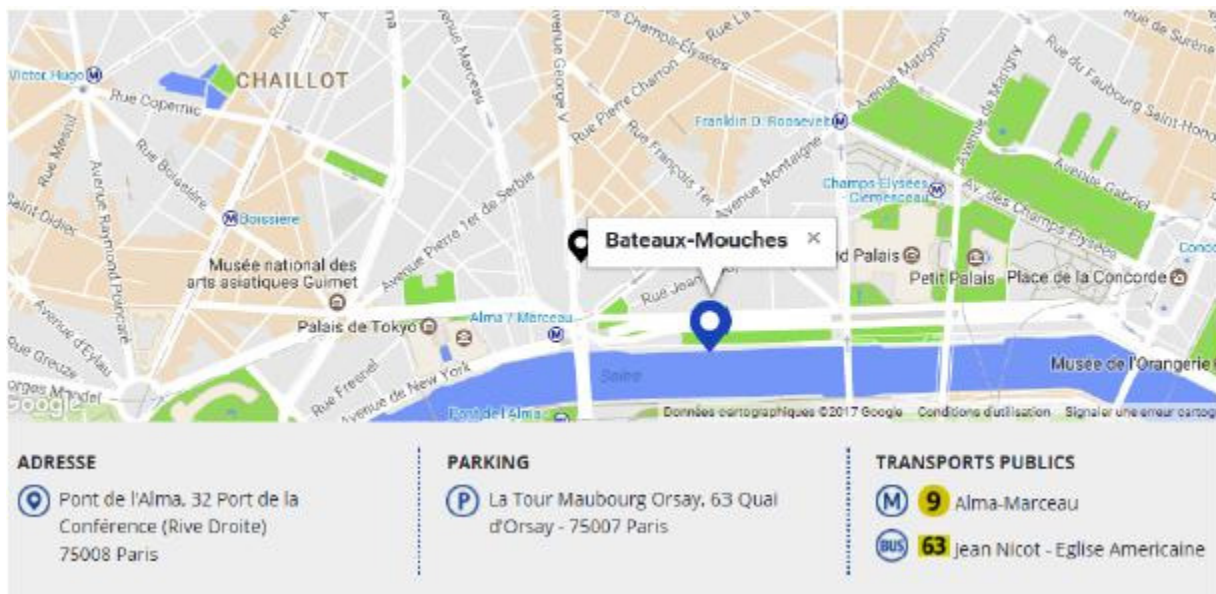
The Paris City Tour and the Gala Dinner will be held on **Thursday, 12th September**. We will depart by bus at 05:30 pm from FIAP building for the Paris City Tour where we will enjoy of a nice tour around the main monuments.

For the Gala Dinner, we will board on a riverboat for a Seine dinner cruise through Paris.

The meeting point for the Gala Dinner is:

**Pont de l'Alma,
32, Port de la conférence (Rive Droite)
75008 Paris
Metro Line 9 – Alma-Marceau Station**

The Paris City Tour buses will drop you at this address. If you skip the bus, **the appointment is fixed at 07:00 pm** at Pont de l'Alma directly in front of the boat (see map below).



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