# Sebastiano Panichella - Curriculum vitae & major scientific achievements


## Contact Information

*Address:* School of Engineering, Zurich University of Applied Science
Obere Kirchgasse 2 / Steinberggasse 12/14 8400 Winterthur, Switzerland.
*E-mail:* panc@zhaw.ch (or alternatively spanichella@gmail.com)
*Home Page:* https://spanichella.github.io/index.html
*Google Scholar Ref:* https://scholar.google.it/citations?user=HiNuBFgAAAAJ&hl=en&oi=ao
*Detailed CV:* https://spanichella.github.io/img/CV.pdf


## Education

Sebastiano Panichella was born (19/12/1986) in Italy. He received the PhD in Computer Science from the University of Sannio defending the thesis entitled *"Supporting Newcomers in Open Source Software Development Projects"* (**July 18th 2014**). **Supervisors**: Prof. Massimiliano Di Penta and Prof. Gerardo Canfora.

## Employment history & Institutional responsibilities

Senior Computer Science Researcher at Zurich University of Applied Science (from ***20-08-2018***) and Part-time (External) Lecturer at the University of Zurich (from ***2018-08-20***). Previously he was postdoc at University of Zurich (**2014-11-01 - 2018-08-19**) in the lab of Prof. Gall.

His **research interests** are in the domain of Software Engineering (SE), cloud computing (CC), and Data Science (DS): DevOps (e.g., Continuous Delivery, Continuous integration), Machine learning applied to SE, Software maintenance and evolution (with particular focus on Cloud, mobile, AI-based, and Cyber-physical applications). He authored or co-authored around **ninety** (considering also demonstration, dataset and poster) papers appeared in International Conferences and Journals (26 of them published during the postdoctoral experience at the UZH).

## Approved research projects

### EU projects

- Sebastiano Panichella is the technical coordinator (PI) for the EU H2020-ICT-2018-20 call, entitled COSMOS, contract no. 957254. **Description**: Much of the increasing complexity of ICT systems is being driven by the more distributed and heterogeneous nature of these systems, with Cyber-Physical Systems accounting for an increasing portion of Software Ecosystems. This basic premise underpins the COSMOS proposal which focuses on blending best practices DevOps solutions with the development processes used in the CPS context: this will enable the CPS world to deliver software more rapidly and result in more secure and trustworthy systems. The COSMOS CPS pipelines will be validated against 5 use cases provided by industrial partners representing healthcare, avionics, automotive, utility and railway sectors. **Total H2020 project 5MIL EUR, Sebastiano Panichella got direct funding for 770,000 EUR**. Web page: https://www.cosmos-devops.org/
- Sebastiano Panichella was partially funded with Gabriele Bavota, Gerardo Canfora, Massimiliano Di Penta, in the EU FP7-ICT-2011-8 project Markos, contract no. 317743.

### Innosuisse projects

- Sebastiano Panichella is the main research responsible (PI) of Innosuisse project ARIES: Exploiting User Journeys and Testing Automation for Supporting Efficient Energy Service Platforms (project Nr. 45548.1 IP-ICT). ARIES brings together a consortium of two partners: the start-up LEDCity (https://ledcity.io/) and the ZHAW. ARIES project delivers a data oriented and software platform that implements requirements and testing engineering mechanisms to enhance customer experience. ARIES project is realized in the context of LEDCity, a Swiss start-up specialized in AI-based optimization of lighting systems. **Total project funding: direct funding for around 500,000 CHF**. Web page: https://aries-devops.ch/index.html

**Doctoral funding at the SoE ZHAW**

- Sebastiano Panichella got funding (as main research responsible) by the Doctoral funding at the SoE ZHAW. The funding program of the School of Engineering alongside the existing Cooperation partner programs in the field of data science, other programs, and others). The funding will support and complement the studies of a Ph.D. student working in the context of the COSMOS H2020 project (contract no. 957254). **Total project 114,000 CHF**.

**SNF projects**

- Sebastiano Panichella obtained funding as main PI for the project "SwarmOps: Human-sensing based MLOps for Collaborative Cyber-physical systems" (2024-2028). The funding will support two new Ph.D. students and complement the studies of two existing ones in his team. (**Total project 667,280 CHF**).
  Web page: https://spanichella.github.io/projects.html
- Sebastiano Panichella obtained funding (as co-applicant) for the SURF-MobileAppsData (No. 200021−166275) SNF project. The goal of the SURF-MobileAppsData project is mining mobile apps data available in app stores to support software engineers in better supporting maintenance and evolution activities for these apps (**Total SNSF (CHF) 349,926**). Web page: http://www.ifi.uzh.ch/en/seal/people/panichella/SNF-Projects.html

Supervision (or Co-Supervision) of researchers at graduate & postgraduate levels He is **supervised** 11 theses of undergrad students, theses (or projects) of 19 MSc students and has **supervised (or co-supervised)** the work of 6 research assistants, and 9 PhD students (6 of them during the postdoctoral experience at the University of Zurich), which published in relevant conference and journal venues. A complete list on advised researchers and papers accepted can be found at https://spanichella.github.io/#teaching

Teaching (ZHAW, UZH, and UniBe) activities:

**University of Bern:**

- Co-lecturer for the Software Engineering Course - Topic "DevOps and testing AI-based cyber-physical systems" - 2022, 2023, 2024.

**University of Zurich:**

- Lecturer and co-lecturer for the Software Maintenance and Evolution course in 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022. *Learning Goals*: During the course Sebastiano teach to the students the foundations of software evolution and maintenance. This includes successful but aged software systems (i.e. legacy software), object-oriented reengineering, refactoring, change patterns, empirical analysis of software, classification/prediction models, software quality analysis. This course also discusses analysis platforms and tools, test case generation and continuous delivery technologies in the context of autonomous systems (e.g., drones and self-driving cars).

**Zurich University of Applied Sciences (ZHAW):**

- DevOps Testing for Complex Systems - 2023, 2024.
- Cloud Computing course - CCP2 2020
- INF-Prog1 2020. Learning Goals: The main features of the Python program language.
- Co-lecturer for the CAS Information Engineering in 2018, 2019, 2020. Learning Goals: Python program language.
- Lab Instructor for the Programming course in Java in 2018, 2019, 2020. Learning Goals: Java program language.

**University of Sannio**:

- *Lab Instructor* (December 2013) for the Programming Techniques course of Professor Gerardo Canfora
*Learning Goals*: The Languages and Grammars, JavaCC parser.
- *Teaching Assistant* for the Software Engineering course of Prof. Massimiliano Di Penta:
*Learning Goals*: Recovering Traceability Links via Information Retrieval Methods

## Memberships in panels, boards, and individual scientific reviewing activities

**Reviewer/opponent of Ph.D. Dissertations:**

- External Review of Ph.D.research proposal by Mme Zid at at Polytechnique Montreal, Institute of Computer Science (August 2022).
- Reviewer/opponent of a Ph.D. Dissertation of Nitish Shriniwas at University of Bern, Institute of Computer Science (March 2022).
- Reviewer/opponent of a Ph.D. Dissertation at University of Tartu, Institute of Computer Science (2019/2020)

**Editorial Board Member of International Journals:**

- *Journal of Software: evolution and process.*

**Editor of special Issues at International Journals:**

- Editor of Software Track special Issue at Journal of Science of Computer Programming on SBST22: Search-Based Software Engineering Tools. 2022
- Editor of special issue at Science of Computer Programming Journal on NLP-based software engineering, 2022.
- Editor of the 'Software Engineering for Mobile Applications' special Issue at EMSE Journal, 2018-07.
- Editor of the 'User Feedback and Software Quality in the Mobile Domain' special Issue at IST Journal, 2018-06.

**Organising committee member of International Conferences and Workshops:**

- *Program Committee member* of ICSE, FSE, ASE, ICSME, ICST, ICSOFT, SSBSE, ICPC, SSBSE, SBST, SANER, MSR, WAISE, MaLTeSQuE, SEAA, SATToSE, VST, RoSE, QUATIC.
**Complete list at**: https://spanichella.github.io/#services

**Reviewer for the following International Journals:**

- *Scientific Reports, Nature - Empirical Software Engineering - Transactions on Software Engineering - Transactions on Software Engineering and Methodology - Journal of Systems and Software - Information and Software Technology - Journal of Software: Evolution and Process - Science of Computer Programming - Journal of Computer Science and Technology - Transactions on Mobile Computing - Communications of the ACM - Software Testing, Verification and Reliability - Journal of Object Technology - Transactions on Services Computing.*
**Complete list at**: https://spanichella.github.io/#services

**External Reviewer of Grant Applications**

- *External Reviewer of PRIN (National Project) and member of the CNVR (National Committee for the Evaluation of Research) for the Ministry for University and Research (MUR) in Italy, aimed at financing public research projects.*
- *External Reviewer of projects submitted in the Quebec-Flanders bilateral research cooperation program*
- *External Reviewer of projects submitted in the Mitacs Accelerate research program*

- *External Reviewer of PRIN (National Project) and member of the CNVR (National Committee for the Evaluation of Research) for the Ministry for University and Research (MUR) in Italy, aimed at financing public research projects*

Active memberships in scientific societies, fellowships in renowned academies

- Member of the **EU Sparc Robotics group** - https://sparc-robotics-portal.eu
- He is a **member of IEEE/ACM**.

Organising committee member of International Conferences and Workshops:

- *Program Committee member* of ICSE, FSE, ASE, ICSME, ICST, ICSOFT, SSBSE, ICPC, SSBSE, NLBSE, SBFT, SBST, SANER, MSR, WAISE, MaLTeSQuE, SEAA, SATToSE, VST, RoSE, QUATIC.
  **Complete list at**: https://spanichella.github.io/#services

**Organising research workshops:**

- Chair of the *Workshop on Natural Language-Based Software Engineering Workshop* (NLBSE) - Collocated with ICSE 2022, ICSE 2023
- Chair of the *Workshop on Search-Based Software Testing* (SBST) - Collocated with ICSE 2022, ICSE 2023
- Chair of the *Workshop on DevOps Testing for Cyber-Physical Systems - Collocated with ICST 2021 (https://devops4cps-testing.github.io/)*
- Chair of the Tool Competition at the International Workshop on Search-Based Software Testing (2020, 2021)
- *Chair of the first International Workshop on Cloud-Native Applications Design and Experience - CNAX 2018 Co-located with UCC 2018 and BDCAT 2018 conferences, Zurich, Switzerland.*

**Keynote Speaker of International Conferences and co-located events:**

- Speaker at the AIST workshop, co-located with the International Conference on Software Testing, Verification and Validation - 2023
  (https://aistworkshop.github.io/#keynote)
- Speaker at the Workshop on Dependable DevOps co-located with the SafeComp conference, 2021.
- Speaker at the Workshop on Validation, Analysis and Evolution of Software Tests - VST 2018
  (http://vst2018.scch.at/#program)

**Research Meetings**

- *Sebastiano Panichella was invited by the National Institute of Informatics (NII), Japan, to participate in NII Shonan Meeting entitled "Mobile App Store Analytics" (Japan).*

Awards - Complete list at https://spanichella.github.io/#awards

**Award as Reviewer**: Distinguished Reviewer Award SATToSE 2017, at SANER 2018, MSR 2022.
**Best paper award:** ICPC 2011, MaLTeSQuE 2018.
**Best tool award**: ICPC 2014, SANER 2018.
**Nominations for Best Paper**: ICSME 2020, ICSSP 2020, (2) SANER 2018, SANER 2017, ICSME 2014, ICPC 2014, ICSM 2013, ICST 2013.

## Major scientific achievements

**Ability to receive funding as PI and co-PI on topics concerning his research interests**[1]

- Sebastiano Panichella obtained funding (as PI) from the H2020 for the EU project COSMOS: "DevOps for Complex Cyber-physical Systems". **Total H2020 project 5MIL EUR, Sebastiano Panichella got direct funding for 770,000 EUR**. Web page: https://www.cosmos-devops.org/

[1] https://spanichella.github.io/#research-interests

- Sebastiano Panichella obtained funding (as PI) for the the Doctoral funding at the SoE ZHAW. **Total project funding:114,000 CHF**.
- Sebastiano Panichella obtained funding (as PI) from the the Innosuisse for the national project "ARIES: Exploiting User Journeys and Testing Automation for Supporting Efficient Energy Service Platforms". **Total project funding:500,000 CHF**. Web page: https://aries-devops.ch/index.html
- Sebastiano Panichella obtained funding as main PI for the project "SwarmOps: Human-sensing based MLOps for Collaborative Cyber-physical systems" (2024-2028). The funding will support two new Ph.D. students and complement the studies of two existing ones in his team. (**Total project 667,280 CHF**).
  Web page: https://spanichella.github.io/projects.html
- Sebastiano Panichella obtained funding (as co-PI) for the SURF-MobileAppsData SNF project. **Total SNSF (CHF) 349,926**. Web page: http://www.ifi.uzh.ch/en/seal/people/panichella/SNF-Projects.html

**Contributions to the research field & Contributions to the community**

- **Impact in SE:** In past years he focused on applying and combining machine learning, optimization techniques, textual analysis and sentiment analysis approaches to solve several software engineering problems. As demonstrated by the list of his publications of (around ninety papers), he has successfully applied these techniques to many software engineering sub-areas including Mobile Computing (e.g., ICSE, FSE, SANER), textual analysis in SE (e.g., ASE, ICSE, ICSME), Code Review (SANER 2015), Refactoring (ASE 2015), global software engineering (e.g., FSE, ICSME, EMSE), auto-generate code documentation (e.g., ICPC, EMSE), automated testing (ICSE 2016), defect prediction (e.g., GECCO, STVR).
- **Supervised researchers**: He supervised 11 undergrad students, 19 MSc students and currently/recently **supervised (or co-supervised)** the work of 6 research assistants, and 9 PhD students (6 of them during the postdoctoral experience at the University of Zurich)
- The paper [S. Panichella, A. Di Sorbo, E. Guzman, C. Visaggio, G. Canfora, H. Gall: How can I improve my app? Classifying user reviews for software maintenance and evolution. ICSME 2015], which originated the idea behind his SNF project, is one of the **most cited papers of ICMSE 2015** (as reported in Google scholar), with around **500 citations** in 8 years.
- The paper ICPC wrote during the bachelor studies of Dr. Panichella-[G. Capobianco, A. De Lucia, R. Oliveto, A. Panichella, S. Panichella: On the role of the nouns in IR-based traceability recovery. ICPC 2009: 148-157] is **among the most influential papers of ICPC in the last decade [period 2009-2019]**.
- Organized several relevant workshops events for 2021, co-located with relevant conferences in SE[2]

**Award, Recognitions & collaboration with industrial organizations**

- **Award**: He received 4 tools awards (and nominations) as well as 12 best paper awards and best paper nominations[3].
- **Recognitions:** According to the [Results reported by the JSS journal] Sebastiano Panichella was selected in 2021, according to the results reported by the JSS journal[4], as one of the **top-20 Most impactful SE researchers Worldwide in Software Engineering**. According to the [Results reported by the JSS journal] Sebastiano Panichella was selected in 2019, according to the results reported by the JSS journal[5], as one of the **top-20 Most Active Early Stage Researchers Worldwide in Software Engineering**.

[2] https://adevops4iot.github.io/ - https://sbst22.github.io/ - https://nlbse2022.github.io/
[3] https://spanichella.github.io/#awards
[4] https://www.sciencedirect.com/science/article/abs/pii/S0164121221001266
[5] https://www.sciencedirect.com/science/article/pii/S0164121218302334

- **Collaboration with industrial organizations:** Over the years, He established collaboration with several researchers from Switzerland (UZH, USI, ZHAW, ETH, etc.) and abroad involving both academic and industrial organizations: https://spanichella.github.io/#collaborations