

CURRICULUM VITÆ

Alessandra Gorla

Assistant Research Professor

IMDEA Software Institute
Madrid, Spain

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Current Position

IMDEA Software Institute

Assistant Research Professor, Tenure Track

Madrid, Spain

December 2014–

Previous Positions

Saarland University, Software Engineering Chair

Postdoctoral Researcher

Saarbrücken, Germany

April 2012–November 2014

Google inc.

Visiting Researcher

Mountain View, USA

July 2014–October 2014

University of Lugano

Postdoctoral Researcher

Lugano, Switzerland

October 2011–March 2012

Saarland University

Visiting Research Assistant

Saarbrücken, Germany

September 2009–November 2009

University of Lugano

Research and Teaching Assistant

Lugano, Switzerland

October 2006–September 2011

University of Milano-Bicocca

Research Assistant

Milan, Italy

May 2006–September 2006

Education

PhD

University of Lugano (Università della Svizzera Italiana)

PhD in Informatics

Lugano, Switzerland

October 2006–September 2011

Thesis Title: Automatic Workarounds: Exploiting the Intrinsic Redundancy of Software Systems

Advisors: Prof. Mauro Pezzè, Prof. Antonio Carzaniga

Fritz Kutter Award for the best industry related thesis in computer science from a swiss university in 2011.

Master Degree

University of Milano-Bicocca

Master Degree in Informatics, Magna cum Laude

Milan, Italy

October 2003–April 2006

Thesis Title: An Integration Testing Technique to Assess the Quality of Object-Oriented Software

Advisors: Prof. Mauro Pezzè, Prof. Giovanni Denaro

Bachelor Degree

University of Milano-Bicocca

Bachelor Degree in Informatics

Milan, Italy

October 2000–October 2003

Thesis Title: Data-flow Analysis for Object-Oriented Software

Advisors: Prof. Mauro Pezzè, Dr. Vincenzo Martena

Publications

Refereed Journal Articles

- J1** A. Carzaniga, A. Gorla, N. Perino, and M. Pezzè, “Automatic Workarounds: Exploiting the Intrinsic Redundancy of Web Applications”. in ACM Transactions on Software Engineering and Methodology (TOSEM), vol. 24, n. 3, pp. 16:1–16:42. 2015
- J2** A. Gorla, L. Mariani, F. Pastore, M. Pezzè and J. Wuttke “Achieving Cost-Effective Software Reliability Through Self-Healing”. Computing and Informatics, vol. 29, n. 1, pp. 93–115. 2010.
- J3** A. Carzaniga, A. Gorla, and M. Pezzè, “Healing Web Applications through Automatic Workarounds”. In International Journal on Software Tools for Technology Transfer (STTT), vol. 10, n. 6, pp. 493–502. 2008.

Refereed Conference Publications

- C1** S. Roy Choudhary, A. Gorla, and A. Orso “Automated Test Input Generation for Android: Are We There Yet?”. To appear in Proceedings of the 30th IEEE/ACM International Conference on Automated Software Engineering (ASE). 2015
- C2** A. Avdiienko, K. Kuznetsov, A. Gorla, A. Zeller, S. Arzt, S. Rasthofer, and E. Bodden “Mining Apps for Abnormal Usage of Sensitive Data”. in Proceedings of the 37th International Conference on Software Engineering (ICSE), pp. 426–436. 2015 – **Nominated for ACM SIGSOFT Distinguished Paper Award**
- C3** A. Goffi, A. Gorla, A. Mattavelli, M. Pezzè, and P. Tonella “Search-based Synthesis of Equivalent Method Sequences”. in Proceedings of the 22nd ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE), pp. 366–376. 2014
- C4** A. Gorla, I. Tavecchia, F. Gross, and A. Zeller, “Checking App Behavior Against App Description”. in Proceedings of the 36th International Conference on Software Engineering (ICSE), pp. 1025–1035. 2014
- C5** A. Carzaniga, A. Goffi, A. Gorla, A. Mattavelli, and M. Pezzè, “Cross-Checking Oracles From Intrinsic Software Redundancy”. in Proceedings of the 36th International Conference on Software Engineering (ICSE), pp. 931–942. 2014
- C6** M. Vivanti, A. Mis, A. Gorla, and G. Fraser, “Search-based Data-flow Test Generation”. In Proceedings of the IEEE International Symposium on Software Reliability Engineering (ISSRE), pp. 370–379. 2013.
- C7** A. Carzaniga, A. Gorla, A. Mattavelli, N. Perino, and M. Pezzè, “Automatic Recovery from Runtime Failures”. In Proceedings of the 35th International Conference on Software Engineering (ICSE), pp. 782–791. 2013.
- C8** J. Wuttke, Y. Brun, A. Gorla, and J. Ramaswamy, “Traffic Routing for Evaluating Self-Adaptation”. In Proceedings of the 7th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), pp. 27–32. 2012.
- C9** A. Carzaniga, A. Gorla, N. Perino, and M. Pezzè, “Automatic Workarounds for Web Applications”. In Proceedings of the ACM SIGSOFT 18th Symposium on Foundations of Software Engineering (FSE), pp. 237–246. 2010.
- C10** G. Denaro, A. Gorla and M. Pezzè, “Contextual Integration Testing of Classes”. In Proceedings of the 11th International Conference on Fundamental Approaches to Software Engineering (FASE), pp. 246–260. 2008.

Refereed Workshop Publications

- W1** J. Thomé, A. Gorla, and A. Zeller, “*Search-Based Security Testing of Web Applications*”. In Proceedings of the 7th International Workshop on Search-Based Software Testing (SBST), pp. 5–14. 2014 – **Best Paper Award**
- W2** A. Carzaniga, A. Gorla and M. Pezzè, “*Self-Healing by Means of Automatic Workarounds*”. In Proceedings of the 2008 International Workshop on Software Engineering for Adaptive and Self-Managing Systems (SEAMS), pp. 17–24. 2008.
- W3** A. Gorla, “*Towards Design for Self-Healing*” in Proceedings of the 4th International Workshop on Software Quality Assurance (SOQUA), pp. 86–89. 2007.

Refereed Book Chapters

- BC1** K. Kuznetsov, A. Gorla, I. Tavecchia, F. Gross, and A. Zeller, “*Mining Android Apps for Anomalies*”. To appear in The Art and Science of Analyzing Software Data. 2015.
- BC2** R. de Lemos, H. Giese, H.A. Müller, M. Shaw, J. Andersson, L. Baresi, B. Becker, N. Bencomo, Y. Brun, B. Cukic, R. Desmarais, S. Dustdar, G. Engels, K. Geihs, K.M. Goeschka, A. Gorla, V. Grassi, P. Inverardi, G. Karsai, J. Kramer, M. Litoiu, A. Lopes, J. Magee, S. Malek, S. Mankovskii, R. Mirandola, J. Mylopoulos, O. Nierstrasz, M. Pezzè, C. Prehofer, W. Schäfer, R. Schlichting, B. Schmerl, D.B. Smith, J.P. Sousa, G. Tamura, L. Tahvildari, N.M. Villegas, T. Vogel, D. Weyns, K. Wong, and J. Wuttke, “*Software Engineering for Self-Adaptive Systems: A Second Research Roadmap*”. In Software Engineering for Self-Adaptive Systems II, pp. 1–32. 2012.
- BC3** J. Andersson, L. Baresi, N. Bencomo, R. de Lemos, A. Gorla, P. Inverardi, and T. Vogel, “*Software Engineering Processes for Self-adaptive Systems*”. In Software Engineering for Self-Adaptive Systems II, pp. 51–75. 2012.
- BC4** A. Carzaniga, A. Gorla, and M. Pezzè, “*Fault Handling with Software Redundancy*”. In Architecting Dependable Systems VI, pp. 148–171. 2009.

Refereed Short Publications

- S1** A. Mattavelli, A. Goffi, and A. Gorla, “*Synthesis of Equivalent Method Calls in Guava*”. In Proceedings of the 2015 Symposium on Search-Based Software Engineering (SSBSE Challenge Track), pp 248–254. 2015.
- S2** A. Carzaniga, A. Gorla, A. Mattavelli, and N. Perino, “*A Self-healing Technique for Java Applications*”. In Proceedings of the 34th International Conference on Software Engineering (ICSE Poster Track), pp. 1445–1446. 2012
- S3** A. Carzaniga, A. Gorla, N. Perino, and Mauro Pezzè, “*RAW: runtime automatic workarounds*”. In Proceedings of the 32nd ACM/IEEE International Conference on Software Engineering (ICSE Tool Demo Track), pp. 321–322. 2010.
- S4** G. Denaro, A. Gorla, and M. Pezzè, “*DaTeC: Dataflow Testing of Java Classes*”. In Proceedings of the International Conference on Software Engineering (ICSE Tool Demo Track), pp. 421–422. 2009.
- S5** A. Gorla, “*Automatic Workarounds as Failure Recoveries*”. In Proceedings of the 2008 Foundations of Software Engineering Doctoral Symposium (FSE DS Track), pp. 9–12. 2008 – **Best Student Poster Award**

Public Talks

- “*CHABADA: Checking app behavior against app descriptions*”, 36th CREST Open Workshop, University College London. November 18, 2014.

- “*Checking App Behavior Against App Descriptions*”, invited talk, University of Uruguay. August 4, 2014.
- “*Mining Android Applications for Anomalies*”, Dagstuhl Seminar n. 14261 on Software Development Analytics, July 2014.
- “*Checking App Behavior Against App Descriptions*”, 2014 European Open Symposium on Empirical Software Engineering. June 30, 2014.
- “*Checking App Behavior Against App Descriptions*”, ICSE conference, research track. June 6, 2014.
- “*Search-Based Security Testing of Web Applications*”, SBST workshop. June 2, 2014.
- “*Checking App Behavior Against App Descriptions*”, invited talk, University of Luxembourg. May 28, 2014.
- “*Automatic Recovery from Runtime Failures, and Beyond*”, 29th CREST Open Workshop, University College London. November 18, 2013.
- “*Automatic Recovery from Runtime Failures*”, ICSE conference, research track. May 24, 2013.
- “*Automatic Recovery from Runtime Failures*”, Dagstuhl Seminar n. 13061 on Fault Prediction, Localization, and Repair. February 4, 2013.
- “*Automatic Workarounds: Exploiting the Intrinsic Redundancy of Software Systems*”, University of Bern. March 20, 2012.
- “*Automatic Workarounds: Exploiting the Intrinsic Redundancy of Software Systems*”, Saarland University. November 7, 2011.
- “*Automatic Workarounds for Web Applications*”, Dagstuhl Seminar n. 11062 on Self-repairing Programs. February 10, 2011.
- “*Automatic Workarounds for Web Applications*”, FSE conference, research track. November 11, 2010.
- “*Automatic Workarounds for Web Applications*”, Dagstuhl Seminar n. 10431 on Software Engineering for Self-Adaptive Systems. October 27, 2010.
- “*Automatic Workarounds for Web Applications*”, Google Testing Automation Conference. October 21, 2009.
- “*Automatic Workarounds as Failure Recoveries*”, FSE Doctoral Symposium. November 11, 2008.
- “*Self-Healing by Means of Automatic Workarounds*”, SEAMS workshop. May 12, 2008.
- “*Contextual Integration Testing of Classes*”, FASE conference. April 1, 2008.
- “*Towards Design for Self-Healing*”, SoQUA workshop. September 4, 2007.

Participation in Funded Research Projects

- ERC project SPECMATE, Saarland University, 2012–Dec. 2014
This project aims to extract specifications from software systems by means of automated test generation.
- SNF project *WASH: WorkArounds for Self-Healing*, University of Lugano, 2009–2011
In this project we investigated a general approach for failure recovery based on automatic workarounds. We observed that software systems of significant complexity are often redundant, in the sense that the same functionality can be obtained through multiple sequences of operations. By exploiting this redundancy, we could built effective workarounds capable of recovering from some functional failures.

- SNF project *PerSeoS: Pervasive Self-Adaptive Software Systems*, University of Lugano, 2007–2009

This project targeted complex software systems, i.e., systems composed of many heterogeneous devices, which communicate to each other through distributed and wireless interfaces, and tackled the problem of coordinating heterogeneous self-adaptive mechanisms to solve conflicts and avoid chaos.

Teaching Experience

Lecturer

- *Challenges and Opportunities in Mobile Testing*, 11th International Summer School on Training And Research On Testing, Cádiz, Spain, 29th June - 2nd July 2015.
- *Static and Dynamic Analysis Techniques for Mobile Security*, ECI Winter School, University of Buenos Aires, Argentina, 28th July - 2nd August 2014.
- *Software Engineering* (guest lectures in Prof. Andreas Zeller's course), Saarland University, Winter 2013/2014.
- *Mobile Testing and Analysis* (seminar course, with Prof. Andreas Zeller), Saarland University, Summer 2013. Ranked as the *best seminar course of the semester*.
- *Automated Testing and Verification* (advanced course, with Dr. Juan Pablo Galeotti), Saarland University, Winter 2012/2013.
- *Self-healing Systems* (seminar course, with Prof. Andreas Zeller), Saarland University, Summer 2012.
- *iPhone Programming* (special course to undergraduates), University of Lugano, Summer 2009.

Teaching Assistant

- *Software Quality + LAB* (Master course), University of Lugano, Spring 2010.
Instructor: Prof. Mauro Pezzè, Prof. Carlo Ghezzi.
- *Software Quality + LAB* (Master course), University of Lugano, Spring 2009.
Instructor: Prof. Mauro Pezzè.
- *Software Atelier I* (Bachelor course), University of Lugano, Fall 2008.
Instructor: Prof. Mauro Pezzè.
- *Software Quality + LAB* (Master course), University of Lugano, Spring 2008.
Instructors: Prof. Mauro Pezzè, Prof. Michal Young.
- *Software Design* (Bachelor course), University of Lugano, Spring 2007.
Instructor: Prof. Walter Binder.
- *Software Atelier II* (Bachelor course), University of Lugano, Spring 2007.
Instructor: Prof. Alex Repenning.
- *Technology Lab III: Testing* (Bachelor course), University of Lugano, Fall 2006.
Instructor: Prof. Mauro Pezzè.

Supervised Students

Master Students

- Tahir Javaid, "Testing of Android Testing Tools: Development of a Benchmark for the Evaluation", Universidad Politécnica de Madrid (UPM), Spain, July 2015.

- Elias Hartz, “*History-Guided Generation of Tests with Maximum Impact*”, Saarland University, Germany, January 2015.
- Daniel Muth, “*POLYGRAPP: Heuristic Permission Management for Android*”, Saarland University, Germany, October 2014.
- Dimas Kurniawan and Souza Nurafrianto Windiarsono Putra, “*Bugstudio: An Android Bug Reporting Tool for Reproducing Field Failures*”, Saarland University, Germany, August 2014.
- Marie-Therese Walter, “*Semantic Detection of Drive-by Attacks in a Browser*”, Saarland University, Germany. April 2014.
- Julian Thomé, “*BioFuzz: Bio-Inspired Fuzz Testing for Finding Security Vulnerabilities in Web Applications*”, Saarland University, Germany. December 2013.
- Ezio Bellingeri, “*A Transactional Recovery Technique for Java Applications*”, University of Milano-Bicocca, Italy. April 2012.
- Alberto Goffi, “*Semi-automatic Inference of Equivalent Sequences*”, University of Milano-Bicocca, Italy. February 2012.
- Giuseppe Falco, “*Automatic Generation of Workarounds*”, University of Milano-Bicocca, Italy. July 2010.
- Fabrizio Faustinoni, “*Empirical Evaluation of a Self-healing Technique*”, University of Milano-Bicocca, Italy. July 2010.
- Marco Massarelli, “*A Data-flow Technique for Integration Testing of Object Oriented Applications*”, University of Milano-Bicocca, Italy. April 2010.
- Nicolò Perino, “*Automatic Workarounds for Self-healing Web applications*”, University of Milano-Bicocca, Italy. July 2009.

Bachelor Students

- Jianan Ma, “*Predicting Code Quality Using Versatility of a Method*”, Saarland University, Germany. March 2015.
- Michael Backenköhler, “*Dataflow Testing in Evosuite*”, Saarland University, Germany. January 2014.
- Lukas Subel, “*jMutOps: Matching Code Changes–Mutation Operators.*”, Saarland University, Germany. December 2013.
- Renzo Russi, “*Data-flow Analysis for Testing Object Oriented Software.*”, University of Lugano, Switzerland. June 2008.
- Andreia David, “*Generating Automatic Workarounds from Finite-State Models*”, University of Lugano, Switzerland. June 2009.
- Matteo Re Cecconi, “*DaTeC: Data-flow Testing of Java Classes*”, University of Lugano, Switzerland. June 2009.

Academic Service

Organizing Committees

- Artifact Evaluation co-chair, International Symposium on Engineering Secure Software and Systems (ESSoS) 2016.

- Tool Demonstrations co-chair, 24th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE) 2016.
- Artifact Evaluation co-chair, ACM International Symposium on Software Testing and Analysis (ISSTA) 2016.
- Tool Demonstrations co-chair, IEEE and ACM International Conference on Automated Software Engineering (ASE) 2015.
- GI-Dagstuhl Seminar on Software Engineering for Self-Adaptive Systems, October 2014.

Program Committees

- 13th Working Conference on Mining Software Repositories (MSR) 2016.
- ACM International Symposium on Software Testing and Analysis (ISSTA) 2016.
- IEEE International Conference on Software Testing, Verification and Validation (ICST) 2016.
- IEEE/ACM Third International Conference on Mobile Software Engineering and Systems (MOBILE-Soft) 2016.
- IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE), Visions of 2025 and Beyond Track, 2016.
- IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE) Workshops, 2016.
- 23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER), ERA Track 2016.
- 23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER) 2016.
- 31st Annual ACM/SIGAPP Symposium On Applied Computing (SAC), Service-Oriented Architectures and Programming (SOAP) Track 2016.
- Third International Workshop on Software Development Lifecycle for Mobile (DeMobile) 2015.
- ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE) 2015, Artifact Evaluation committee member.
- IEEE and ACM International Conference on Automated Software Engineering (ASE) 2015, member of the Expert Review Panel.
- ACM International Symposium on Software Testing and Analysis (ISSTA) 2015.
- IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE), Software Engineering In Practice track, 2015.
- 10th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS) 2015, co-located with the IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE).
- Italian Student Contest on Software Engineering (SCORE-it) 2015, co-located with the IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE).
- ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE) 2014, Artifact Evaluation committee member.
- ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA) 2014, Artifact Evaluation committee member.

- IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE), Posters track 2014.
- ACM SIGPLAN Conference on Systems, Programming, Languages and Applications (OOPSLA) 2013, Artifact Evaluation committee member.
- IEEE and ACM International Conference on Automated Software Engineering (ASE) 2013, member of the Expert Review Panel.
- Student Contest on Software Engineering (SCORE) 2013, co-located with the IEEE and ACM-SIGSOFT International Conference on Software Engineering (ICSE).

Reviewer for Technical Journals

- ACM Transactions on Software Engineering and Methodology (TOSEM).
- IEEE Transactions on Software Engineering (TSE).
- IEEE Software.
- Journal of Systems and Software (JSS), Elsevier.
- Empirical Software Engineering, Springer.
- Journal of Software Practice and Experience, Wiley.

Honors, Awards, Grants

- Nomination for ACM SIGSOFT Distinguished Paper Award for “Mining Apps for Abnormal Usage of Sensitive Data”, 37th International Conference on Software Engineering (ICSE). May 2015.
- Best paper award for “Search-Based Security Testing of Web Applications”, 7th International Workshop on Search-Based Software Testing (SBST), June 2014.
- Award for the best seminar course “Mobile Testing and Analysis” of the summer semester, Saarland University. July 2013.
- Fritz Kutter Award for the best industry related Ph.D. thesis in computer science from a Swiss university. November 2011.
- Best student poster award, 16th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE 2008). November 2008.
- Student travel grant to attend the 16th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE 2008), granted by ACM SIGSOFT. September 2008.