



Dario Di Nucci

NAME: Dario Di Nucci

DATE OF BIRTH: 3rd September, 1988

PLACE OF BIRTH: Isernia, Italy

ADDRESS: via Raffaele Iorio 27, 86170 Isernia (IS), Italy

PHONE: +39 333 340 3254

E-MAIL: ddinucci@unisa.it

WEBSITE: <http://dardin88.github.io>

SKILLS

OPERATING SYSTEMS	Linux, Windows, macOS
PROGRAMMING LANGUAGES	C, Java, JavaScript, Matlab, R, Python
WEB-ORIENTED LANGUAGES	HTML, CSS, PHP
DATABASE LANGUAGES	SQL, PostgreSQL
CONTROL VERSION SYSTEMS	Git, Subversion
BUG TRACKING SYSTEMS	Bugzilla, JIRA
OTHERS	LaTeX, UML, Data Mining, Data Warehousing, Information Retrieval

LANGUAGE SKILLS

ITALIAN	Mother tongue
ENGLISH	B2

SOFTWARE PROJECTS

2017	<p>ADOCTOR https://github.com/fpalomba/aDoctor ADOCTOR is a tool able to identify 15 Android-specific code smells from the catalogue by Reimann et al.</p> <p>PETRA http://tinyurl.com/je2nxkd PETRA is a software able to estimate the energy consumption of method calls in Android apps. It is based on some Android tools that are Monkey, Batterystats, Systrace, and dmtracedump.</p>
2015	<p>LANDFILL http://www.sesa.unisa.it/landfill Landfill is a Web-based platform for sharing code smell datasets. It also provides a set of APIs for programmatically accessing its data. Anyone can contribute by: improving existing datasets or sharing and posting new datasets.</p>
2014	<p>GNOME MAPS https://wiki.gnome.org/Apps/Maps Gnome Maps is a map application for GNOME.</p>

GRAPHHOPPER

<https://graphhopper.com>

GraphHopper offers memory efficient algorithms in Java for routing on graphs. E.g. Dijkstra and A* but also optimized road routing algorithms like Contraction Hierarchies. It stands under the Apache License and is build on a large test suite.

WORK EXPERIENCE

04/2014–09/2014

SOFTWARE DEVELOPER

Gnome and GraphHopper

Google Summer of Code 2014 working on Gnome Maps and GraphHopper.

09/2011–01/2012

SOFTWARE DEVELOPER

CercAziende.it, Venafro, Italy

Development of a search engine for indexing and searching data on a MySQL database.

11/2005–12/2005

CUSTOMER SERVICE REPRESENTATIVE / TECHNICAL SUPPORT

eliquidMEDIA International Inc., Windsor, ON, Canada

Web development and customer relationship handling.

EDUCATION

2017/06

INTERNATIONAL SUMMER SCHOOL ON SOFTWARE ENGINEERING (ISSSE)

University of Salerno, Fisciano, Italy

2017/03 – 2017/05

VISITING STUDENT

Delft University of Technology, The Netherlands

Supervision: Prof. Andy Zaidman

2016/05 – 2016/07

VISITING STUDENT

Delft University of Technology, The Netherlands

Supervision: Prof. Andy Zaidman

2016/06

INTERNATIONAL SUMMER SCHOOL ON SOFTWARE ENGINEERING (ISSSE)

University of Salerno, Fisciano, Italy

2015/09

INTERNATIONAL SUMMER SCHOOL ON SOFTWARE ENGINEERING (SE SCHOOL@UNIBZ)

Free University of Bolzano, Bolzano, Italy

2014/12 - Actual

DOCTOR OF PHILOSOPHY (PH.D.) PROGRAM IN MANAGEMENT & INFORMATION TECHNOLOGY

University of Salerno, Italy

Fully funded by University of Salerno. Advisor: Prof. Andrea De Lucia

2013/03

ERASMUS IP HUMAN-MACHINE INTERACTION

Reims, France

2011/10 – 2014/09

MASTER'S DEGREE (M.Sc.) IN COMPUTER SCIENCE

University of Salerno, Italy

110/110 cum laude

2007/10 – 2011/05

BACHELOR'S DEGREE (B.Sc.) IN COMPUTER SCIENCE

University of Molise, Italy

110/110 cum laude

CERTIFICATIONS

2014

PROFESSIONAL PRACTICE EXAMINATION FOR THE ENGINEERING LICENSE

RESEARCH INTERESTS

My research activities are mainly focused on maintenance and testing of software systems. In details my research interest are:

- **BUG PREDICTION.** Allocating resources for the testing and the verification of all the parts of a large software system is a cost-prohibitive task. To alleviate this issue, prediction models able to identify portions of source code more prone to contain bugs have been the object of several studies. The main research topic is the definition of accurate prediction models that, on the one hand use a suitable set of predictors able to characterize the bug-proneness of code components, and on the other hand are able to use appropriate machine learning techniques to distinguish those components affected by bug.
- **SEARCH BASED SOFTWARE TESTING.** Software testing is an essential yet expensive activity in software development, therefore much research effort has been put to automate it as much as possible. Search-based software testing consists of using meta-heuristic optimizing search technique, such as genetic algorithms, to address problems in the software testing and verification and validation domain, such as regression testing optimization and automatic test data generation. The main goal of an optimization process is to guide the search toward good solutions from a potentially infinite search space, within a practical time limit.
- **ENERGY OPTIMIZATION OF MOBILE APPS.** Energy efficiency is a vital characteristic of any mobile app, and indeed is becoming an important factor for user satisfaction. However, optimizing the energy consumption of a mobile app is non-trivial due to the highly volatile nature of mobile execution environments and the lack of knowledge of software developers. The goal of this topic is on the one hand to build new tools able to measure the energy profile of mobile apps, and on the other hand to propose new methods and tools able to assist software developers.
- **MINING SOFTWARE REPOSITORIES.** Software repositories such as source code control systems, communications stored between project staff and monitoring systems of the defects are used to improve the management of the progress of software projects. The purpose of this branch of research is to find out how to obtain information in order to help understand the development and evolution software processes, support forecasts on software development, and plan future developments.
- **EMPIRICAL SOFTWARE ENGINEERING.** Empirical software engineering is a subdomain of software related to experiments on systems software (software products, processes and resources). This branch includes the design of experiments on software, the collection of the results, and the consequent development of laws and theories.

TEACHING

TEACHING ASSISTANCE

2016/17	SOFTWARE ENGINEERING, MANAGEMENT AND EVOLUTION
2015/16	Master's Degree in Computer Science, University of Salerno, Italy
2015/16	SOFTWARE ENGINEERING: MAINTENANCE AND TESTING
	Master's Degree in Computer Science, University of Salerno, Italy
2016/17	PROGRAMMING I
2015/16	Bachelor's Degree in Computer Science, University of Salerno, Italy
2016/17	SOFTWARE ENGINEERING
2015/16	Bachelor's Degree in Computer Science, University of Salerno, Italy
2016/17	WEB DEVELOPMENT
	Bachelor's Degree in Computer Science, University of Salerno, Italy

THESES COORDINATION SUPPORT

2017	IMPLEMENTATION OF A SOFTWARE ENERGY ESTIMATION METHODOLOGY IN AN INTEGRATED DEVELOPMENT ENVIRONMENT Student: Roberto Contaldo – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	DESIGN AND IMPLEMENTATION OF A DEFECT PREDICTION TOOL Student: Giuseppina Tufano – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	DESIGN AND IMPLEMENTATION OF A PLUGIN FOR THE DETECTION OF ENERGY DEFECTS OF MOBILE APPLICATIONS Student: Sara Zaino – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	DESIGN AND IMPLEMENTATION OF A DEFECT PREDICTION TOOL BY USING CROSS-PROJECT TECHNIQUES Student: Pasquale Martiniello – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
2016	TRIO: A TOOL FOR REGRESSION TESTING OPTIMIZATION Student: Antonio Luca D'Avanzo – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	CHECKAPP: A TOOL FOR MONITORING JAVA APPLICATION PERFORMANCE Student: Elisa D'Eugenio – M.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	DESIGN AND IMPLEMENTATION OF A DEFECT PREDICTION TOOL Student: Fabiano Pecorelli – B.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	PETRA: A POWER ESTIMATION TOOL FOR ANDROID APPLICATIONS Student: Antonio Prota – M.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
2015	IMPLEMENTATION AND COMPARISON OF NOVEL TECHNIQUES FOR SEARCH BASED TEST DATA GENERATION Student: Giovanni Grano – M.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia
	DESIGN AND IMPLEMENTATION OF A TOOL FOR THE AUTOMATIC GENERATION OF TEST CASES Student: Simone Scalabrino – M.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia

A COMBINED MODEL FOR THE PREDICTION OF DEFECTS

Student: Giuseppe De Rosa – M.Sc. in Computer Science – Advisor: Prof. Andrea De Lucia

PROFESSIONAL ACTIVITIES

ORGANIZATION COMMITTEE PARTICIPATION

2017	SCIENTIFIC SECRETARIAT 13th International Summer School on Software Engineering, University of Salerno, Italy
2016	SCIENTIFIC SECRETARIAT 12th International Summer School on Software Engineering, University of Salerno, Italy

PROGRAM COMMITTEE MEMBER

2018	Workshop on Machine Learning Techniques for Software Quality Evaluation (MaLTesQuE)
2017	International Conference on Advances in System Testing and Validation Lifecycle (VALID)

REVIEWER

INTERNATIONAL JOURNALS	Advances in Software Engineering - Elsevier Arabian Journal for Science and Engineering - Springer Empirical Software Engineering - Springer Information Processing Letters - Elsevier Journal of King Saud University, Computer and Information Sciences - Elsevier Journal of Software: Evolution and Process - Wiley Software Quality Journal - Springer
INTERNATIONAL CONFERENCES	IEEE International Conference on Software Analysis, Evolution, and Reengineering: 2017, 2018 IEEE International Conference on Program Comprehension: 2016 IEEE International Conference on Software Maintenance and Evolution: 2016 (ERA Track) International Conference on Business Information Systems: 2015, 2016 International Conference on Distributed Multimedia Systems: 2015, 2016 International Conference on Enterprise Information Systems: 2015, 2016, 2017

INVITED TALKS

2017	MACHINE LEARNING AND DEEP LEARNING IN PRACTICE 's-Hertogenbosch, The Netherlands, December 5th 2017 DIAGNOSE AND DETECT ENERGY FLAWS OF ANDROID APPS Vrije Universiteit Brussel, Brussels, Belgium. March 23rd 2017
-------------	--

PARTICIPATIONS AT CONFERENCES

2017	CODEMOTION Amsterdam, The Netherlands
	24TH IEEE INTERNATIONAL CONFERENCE ON SOFTWARE ANALYSIS, EVOLUTION, AND REENGINEERING (SANER) Klagenfurt, Austria
2016	SYMPOSIUM ON SEARCH-BASED SOFTWARE ENGINEERING (SSBSE) Raleigh, NC, United States
2015	SYMPOSIUM ON SEARCH-BASED SOFTWARE ENGINEERING (SSBSE) Bergamo, Italy
	37TH ACM/IEEE INTERNATIONAL CONFERENCE ON SOFTWARE ENGINEERING (ICSE) Florence, Italy
	12TH IEEE/ACM WORKING CONFERENCE ON MINING SOFTWARE REPOSITORIES (MSR) Florence, Italy
2014	THE GNOME CONFERENCE (GUDEC) Strasbourg, France

AWARDS AND RECOGNITIONS

2017	NSF TRAVEL SUPPORT Symposium on Search-Based Software Engineering (SSBSE), Raleigh, NC, United States
2015	ACM SIGSOFT STUDENT TRAVEL GRANT 37th ACM/IEEE International Conference on Software Engineering (ICSE), Florence, Italy

PUBLICATIONS

INTERNATIONAL CONFERENCES

- [C8] D. Di Nucci, F. Palomba, A. Prota, A. Panichella, A. Zaidman, A. De Lucia.
PETrA: a Software-Based Tool for Estimating the Energy Profile of Android Applications
In Proceedings of the 39th International Conference on Software Engineering (ICSE 2017) – Demonstrations Track, Buenos Aires, Argentina, 2017, 4 pages, 3-6.
- [C7] F. Palomba, D. Di Nucci, A. Panichella, A. Zaidman, A. De Lucia.
Lightweight Detection of Android-specific Code Smells: the aDoctor Project.
In Proceedings of the 24th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2017) - Tool Track, Klagenfurt, Austria, 2017, 5 pages, 487-491
- [C6] D. Di Nucci, F. Palomba, A. Prota, A. Panichella, A. Zaidman, A. De Lucia.
Software-Based Energy Profiling of Android Apps: Simple, Efficient and Reliable?
In Proceedings of the 24th IEEE International Conference on Software Analysis, Evolution, and Reengineering (SANER 2017) - Klagenfurt, Austria, 2017, 12 pages, 103-114
- [C5] S. Scalabrino, G. Grano, D. Di Nucci, R. Oliveto, A. De Lucia
Search-based Testing of Procedural Programs: Iterative Single-Target or Multi-Target Approach?
In Proceedings of the Symposium on Search-Based Software Engineering (SSBSE 2016) - Raleigh, NC, United States, 2016, 15 pages, 64 - 79
- [C4] F. Palomba, D. Di Nucci, A. Panichella, R. Oliveto, A. De Lucia
On the Diffusion of Test Smells in Automatically Generated Test Code: An Empirical Study.
In Proceedings of the 9th International Workshop on Search-Based Software Testing (SBST 2016) - Austin, TX, United States, 2016, 10 pages, 5-14
- [C3] D. Di Nucci, F. Palomba, S. Siravo, G. Bavota, R. Oliveto, A. De Lucia
On the Role of Developer's Scattered Changes in Bug Prediction.
In Proceedings of the 31st International Conference on Software Maintenance and Evolution (ICSME 2015) - Bremen, Germany, 2015, 10 pages, 241-250
- [C2] F. Palomba, D. Di Nucci, M. Tufano, G. Bavota, R. Oliveto, D. Poshyanyk, A. De Lucia
Landfill: an Open Dataset of Code Smells with Public Evaluation.
In Proceedings of the IEEE/ACM 12th Working Conference on Mining Software Repositories (MSR 2015) - Florence, Italy, 2015, 4 pages, 482-485
- [C1] D. Di Nucci, A. Panichella, A. Zaidman, A. De Lucia
Hypervolume-based Search for Test Case Prioritization.
In Proceedings of the Symposium on Search-Based Software Engineering (SSBSE 2015) - Bergamo, Italy, 2015, 15 pages, 157-172

INTERNATIONAL JOURNALS

[J2] D. Di Nucci, F. Palomba, R. Oliveto, A. De Lucia.

Dynamic Selection of Classifiers in Bug Prediction: an Adaptive Method.

IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI), 2017, Volume 1 Issue 3, 11 pages, 202-212.

[J1] D. Di Nucci, F. Palomba, G. De Rosa, G. Bavota, R. Oliveto, A. De Lucia.

A Developer Centered Bug Prediction Model.

Transactions on Software Engineering (TSE), to appear.

23rd November 2017

A handwritten signature in blue ink, appearing to read "D. Di Nucci", is written on a light blue rectangular background.