

VINCENZO FERME

ABOUT ME

Birth: **Castellammare di Stabia (NA), 26th February 1987**

Nationality: **Italian, Swiss**

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EDUCATION

- April 2014 – Present
Ph.D. Student at Software Institute, Università della Svizzera Italiana (USI)
Project: BenchFlow - A Benchmark for Workflow Management Systems. The goal of the BenchFlow project is to design the first benchmark for assessing and comparing the performance of workflow management systems.
Advisor: Prof. Cesare Pautasso.
- September 2010 – September 2013
Master Degree in Informatics with specialisation in **Design and Development of Software Systems**, at University Milano-Bicocca – Dipartimento di Informatica Sistemistica e Comunicazione (DISCo), Milan.
Experimental thesis in *Quality and Evolution of Software Systems*. Title: “*JCodeOdor: A Software Quality Advisor Through Design Flaws Detection*”.
Graduation mark: **110/110 summa cum laude**.
- September 2006 – October 2010
Bachelor Degree in Informatics, at University Federico II - Facoltà di Scienze Matematiche, Fisiche e Naturali (MM. FF. NN.), Naples.
Experimental thesis in *Natural Language Processing*. Title: “*Algoritmi di decodifica per modelli del linguaggio nel riconoscimento del parlato*”.
Graduation mark: **110/110 summa cum laude**.
- September 2001 – July 2006
High School Diploma of Scientific Lyceum, at Liceo Scientifico Galileo Galilei, Potenza.

WORK EXPERIENCE

- April 2014 – Present
Software Institute, Università della Svizzera Italiana (USI)
Institutional Responsibilities: Researcher, Teaching Assistant
- June 2013 – March 2014
Connexun S.r.l. at University Milano-Bicocca

Software Engineer and Java Developer: implementation of a software system that allows discovering Point Of Interest (POI) from web resources, and identifies POIs relevant to cross-cultural communities, through data analysis and semantic techniques.

Team: five people.

Supervisors: Prof. Carlo Batini, Prof. Matteo Palmonari.

- December 2012 – September 2013

ESSeRE Lab - University Milano-Bicocca

Internship: study of object-oriented software quality models.

Study and implementation of techniques for the analysis of software quality metrics.

Design, implementation, and testing of a tool for object-oriented software metrics computation and *design flaws* detection.

- March 2010 – October 2010

L.U.S.I. Lab - University Federico II

Internship: study of signal processing techniques. Study of the Markov model for speech recognition. Study and implementation of algorithms for speech decoding.

- May 2008 – September 2012

Pubblimedia (Telecommuting)

Webmaster and Web Developer: analysis, design and development of web applications. Realisation of static and dynamic web sites (e.g.: e-commerce, booking) in asp, php, html and ajax following W3C standards, and its back-end management. Optimisation of websites for search engines indexing.

ACADEMIC PROJECTS

- December 2010 – November 2012

University Milano-Bicocca: Team leader of a group of eight components part of a larger team (Scrum development process): design, construction, reverse engineering, quality analysis and testing of a JAVA EE system.

Interaction design of a new social network for off campus students.

Teach a lesson in topic Open Data to a group of students.

Analysis of Linked Data and Ontologies in order to seek and to compute information.

Design and implementation of a Facebook application to manage user community.

- March 2008 – March 2010

University Federico II: Analysis, design and implementation of a system for the sale of tickets for mass events.

Implementation of a database and a socket-based application, for role-playing games.

Implementation of an application in java for the management of databases.

- February 2007 – September 2008

IBM - The DB2 on Campus Portal: Coordinator of the software development process using Rational RequisitePro and Software Architect.

SUPERVISION OF STUDENTS (MASTER THESIS)

Ana Ivanchikj (05.09.2014)

Characterising Representative Models for BPMN 2.0 Workflow Engine Performance Evaluation

Marco Argenti (11.09.2015)

Performance Measurement of Heterogeneous Workflow Engines

Gabriele Cerfoglio (09.09.2016)

The BenchFlow Framework for Flexible Performance Data Collection and Analysis

Simone D'Avico (09.09.2016)
The BenchFlow Framework for Automated Performance Experiments Execution on
Heterogeneous Middleware Systems

Jesper Findahl (06.09.2017)
Automating Goal-Driven Performance Tests in BenchFlow

TEACHING ASSISTANT

Web Atelier (Bachelor, 3rd semester, 9 ECTS)
2014, 2015, 2016, 2017

BPM³ (Master, 2nd semester, 3 ECTS)
2016, 2017

HCI Atelier (Bachelor, 2nd semester, 6 ECTS)
2015

SCIENTIFIC PAPERS REVIEWS

EASE 2014, WeTSOM 2014, IEEE Transactions on Services Computing, BPM-WS 2015, IEEE Cloud
Computing, Software Engineering Journal

ACADEMIC SERVICE

Program Committee: PEaCE 2016, MTD 2017, ICPE 2018 - Artefact Evaluation Track, ZEUS 2018

ACTIVE MEMBERSHIP

Docker Inc. - Docker Campus Ambassador
SPEC RG DevOps - Member
IEEE, ACM - Student Member

LANGUAGE SKILLS

Italian: Mother tongue.

English: Good level of understanding, writing and speaking.

IT SKILLS

Operating Systems

Daily use of: Mac OS X, Ubuntu (Linux).

Good knowledge of: Windows Xp, Windows Vista, Windows 7, Windows 8.

Computer languages

Excellent knowledge of: UML, BPMN, Java, SQL, SPARQL, RDF, JavaScript, AJAX, HTML, HTML5, XHTML, XML, CSS;

Good knowledge of: Go, R, php, asp, c++, c, java EE, DOS, Matlab, MPI, PL/SQL, posix thread, linux socket, RESTful Web Services, awk, shell scripting, OWL, CMS Wordpress, HTML 5, Lucene.

Software

Excellent knowledge of: Docker (Docker Campus Ambassador since Luglio 2017), Faban, Eclipse, intelliJ IDEA, GitHub, MySQL, Microsoft Office (ECDL certification awarded in 2006);

Good knowledge of: R, IBM SPSS, DELL CMC, DELL iDRAC, JMeter, Apache Spark, Apache Cassandra, Apache Kafka, PostgreSQL, Node.JS, Express.JS, SVN, Git, Maven.

HOBBIES

Ski, Mountain Bike, Down Hill, Swimming, Basket, Reading.

VINCENZO FERME

In my academic career, I worked in two main research areas, namely Software Engineering and Software Performance. In the area of software engineering I worked during my Master studies, and I have elaborated, in collaboration with colleagues at the University of Milano-Bicocca, the Oslo and Akershus University College of Applied Sciences, and the Poznań University of Technology, research on defining techniques to characterise the impact of Code Smells (i.e., software architecture issues heuristically detected in code) on Software Quality. As part of this effort, we have identified techniques to prioritise the severity of the detected Code Smells, and to reduce false positive in the detection approaches. We published and presented our research at major international conferences and workshops, such as the International Conference on Software Maintenance, the International Workshop on Refactoring & Testing, and the International Workshop on Managing Technical Debt. During the last year of my Master studies, and before starting my PhD, I collaborated on an industry research project within a research group of four researcher at the University Milano-Bicocca and different professional figures at the company that was backing the project at that time. During this collaboration, we successfully implemented and deployed in production a system to perform semantic data analysis on Point of Interests (POIs) for cross-cultural communities. I mainly contributed to the engineering and development of the system, the collection of POIs from online sources, and the deployment of data analytics models in production.

Currently I am working on Software Performance, during my PhD studies. I contributed, in collaboration with colleagues at the Università della Svizzera Italiana, and the University of Stuttgart, to the development of the first set of benchmarks for benchmarking the performance of Workflow Management Systems (WfMSs) middleware executing the Business Process Model and Notation 2.0 (BPMN 2.0) standard. My main contribution has been the definition of a methodology and a pattern language for benchmarking such middleware, and the development of BenchFlow, an open-source framework for performance benchmarking such middleware. BenchFlow automates the entire end-to-end process of deploying the System Under Test (SUT), issuing the defined workload, collecting performance data and computing generic, as well as WfMS specific, performance metrics. The framework has been made publicly available on GitHub, and we published our research at major conferences such as the International Conference on Business Process Management, the International Conference on Performance Engineering, the International Conference on Cloud Computing and Service Science, and the International Conference on Advanced Information Systems Engineering. We also presented our results as invited speaker at the W-JAX Conference 2015 in Munich, and to a company in the same city the same year, at the International Workshop on Performance and Conformance of Workflow Engines and at the SPEC RG DevOps.

As part of the effort on benchmarking WfMSs, I identified some drawbacks of state of the art performance benchmarking solutions, when it comes to automation, and integration of the same in continuous development lifecycle. We discussed the identified drawbacks in a work published at the International Workshop on Quality Aware DevOps, and we started to tackle some of them. In particular we developed a declarative Domain Specific Language (DSL) for automating performance engineering activities, that enable the users to declare their intent by specifying the target performance goal out of many supported by the DSL. An example of such goals is the exploration of the performance of a SUT, in a configuration space, where the configuration can be changed at different levels of the application stack, e.g., at application level, at workload level, and at provided system resource level. The DSL enables the user to specify this goal, as well as the wanted configuration matrix, in a single definition that abstracts many underlying experiments that needs to be executed to satisfy the stated user's goal. The DSL is then used to automate performance engineering activities, by relying on the above mentioned BenchFlow framework.

For developing the BenchFlow framework, I relied on Docker, a state of the art technology for automating the packaging and deploying of distributed software. This lead to the identification of requirements and solutions to help researchers in enhancing the reproducibility of their experiments, than have been discussed in a tutorial, presented with other colleagues from the University of Zurich, at the International Conference on Web Engineering in 2016.