

Curriculum Vitæ et Studiorum

Franco Milicchio

1 Personal Information

Family Name, Name: **Milicchio, Franco**
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2 Current Position

Assistant Professor (tenured) at the College of Engineering, University Roma Tre.

3 Education

Ph.D. in Computer Science and Engineering, Department of Informatics and Automation, College of Engineering, University Roma Tre, Italy. Degree awarded on March 16, 2007 (National fellowship for Doctoral Degree awarded). Advisor Prof. Alberto Paoluzzi. Reviewers Prof. Chandrajit Bajaj (University of Texas at Austin, USA) and Prof. Vadim Shapiro (University of Wisconsin-Madison, USA). Dissertation: “*Towards a topological unification of finite computational methods*”.

Doctoral School “*Compulog Americas Summer School on Computational Logic*”, Department of Computer Science and Engineering, University of Texas at Dallas, USA, June 2004 (Grant awarded).

Doctoral School “*32ème École de Printemps d'Informatique Théorique: Théorie de la Concurrency*” (32nd Spring School of Theoretical Computer Science: Theory of Concurrency), Centre International de Recontres Mathématiques (CIRM), Marseille-Luminy, France, April 2004.

Graduated in Computer Engineering (Laurea Vecchio Ordinamento, equivalent to Masters in Computer Science and Engineering), *Summa cum Laude*, grade average 29.16 over 30 (GPA 4 over 4). Department of Informatics and Automation, College of Engineering, University Roma Tre, Italy (March 14, 2003). Advisor Prof. Alberto Paoluzzi, Co-advisor Prof. Antonio DiCarlo (Department of Studies on Structures, University Roma Tre). Dissertation “*Stokes BSP: a data structure to compute coboundary and differential forms*”.

4 Awards

The “*Palazzo Massimo LIS/ASL iOS & Android*” multiplatform mobile application has been awarded the European Excellence Award for Accessible Tourism (Bruxelles, Belgium, 2014).

5 Projects

I have worked on a range of projects while also teaching in my position as a professor at the University. My most notable current projects are on the analysis of *large DNA sequences*, and on *computational mechanics*.

I am the designer and lead developer of a C++ library and tools for the parallel analysis–error correction, storage, and assembly–of large Next-Generation Sequences (NGS), based on the de Bruijn graph on desktops and mobile devices. This project uses the Intel’s Threading Building Blocks, Boost Library, Cache-oblivious containers, Out-of-core algorithms, and SIMD programming.

Additionally, I am the lead developer of computational software in C++ for fast and optimized solution of Partial Differential Equations on Solid Mechanics and Riemannian Differential Geometry (Finite Elements), and Computational Fluid Dynamics. These projects are developed with Intel’s Threading Building Blocks, Boost Library, the Dolfin C++ Library, and Python.

I have worked on a range of other projects using other programming languages. My primary focus has been in C++, but I have also completed projects in C#, Python, and Lua, on desktop and mobiles (iOS and Android).

5.1 Ongoing

Computational Mechanics

Designer and lead developer of a C++ software for the solution of non-linear elastic and elastoplastic deformations on solids, and for parallel fluid-dynamics simulations (with Deal.II, Dolfin, MPI, Intel Threading Building Blocks, Boost, OpenCL, CUDA, Autodesk Maya, Blender).

Analysis of Large DNA Sequences

Designer and lead developer of a C++ library and C# GUI for the parallel analysis—error correction, assembly—of large Next-Generation Sequences (NGS), based on the *de Bruijn* graph on desktops and mobile devices (with Intel Threading Building Blocks, Boost, cache-oblivious containers, out-of-core algorithms, Xamarin, SIMD).

5.2 Completed

Genetic Optimization

Designer and lead developer of a C++ software for a parallel genetic optimization algorithm for nonlinear mechanical properties of single-walled carbon nanotubes (with Qt, Dolfin C++, Boost, Intel Threading Building Blocks, Python).

Ostia Antica LIS/ASL iOS & Android

Designer and developer (2016) for a multiplatform mobile application—iOS and Android—tailored for deaf people, for the Roman excavation site of Ostia Antica, Rome. In collaboration with the Italian Ministry for Cultural Heritage, and the ISSR, the Italian school for deaf of Rome (with Corona SDK, Lua).

Sarcophagus of Hercules

Designer and developer (2016) for a gesture-based application based on the Microsoft Kinect SDK for the 50th anniversary of the discovery of the “Sarcophagus of Hercules’ Labors” in Velletri, Rome. In collaboration with the Italian Ministry for Cultural Heritage, and the Archaeological Museum of Velletri (with C#, .Net).

Bimillenary of the Emperor Augustus

Designer and developer (2014) for a gesture-based application based on the Microsoft Kinect 2.0 SDK for the Bimillenary of the Emperor Augustus, in Velletri, Rome. In collaboration with the Italian Ministry for Cultural Heritage, and the Archaeological Museum of Velletri (with C#, .Net).

Palazzo Massimo Family iOS & Android

Designer and developer (2014) for a multiplatform mobile application—iOS and Android—tailored for families, for the museum “Palazzo Massimo”. In collaboration with the Italian Ministry for Cultural Heritage (with Corona SDK, Lua).

Palazzo Massimo LIS/ASL iOS & Android

Designer and developer (October 2011–April 2012) for a multiplatform mobile application—iOS and Android—tailored for deaf people, for the museum “Palazzo Massimo”. In collaboration with the Italian Ministry for Cultural Heritage, and the ISSR, the Italian school for deaf of Rome (with Corona SDK, Lua).

Econometric Modeling

Software engineer (September 2006–February 2007) for the project “Econometric models” in a joint collaboration with Sogei company and the Italian National Territorial Agency: analyzed and developed predictive tools (commercial, residential, productive terrains) for the Italian territory with machine-learning techniques.

System Administrator

System engineer (June 2003–September 2003) at the Department of Studies on Structures, College of Engineering, University Roma Tre. Project “HPC infrastructures and tools”: designed and developed a software infrastructure for transparent High Performance Computing (with Kerberos, OpenLDAP, OpenAFS, MPI).

Software Developer

Software developer (April 2002–July 2002) at the Department of Informatics and Automation, College of Engineering, University Roma Tre. Project “PLaSM IDE”: designed and developed a multi-platform Qt-based IDE for the PLaSM programming language under MacOS X, Windows, and Linux (with Qt, C++).

6 Academic Experience**2016–present**

Lecturer for “Mobile Computing”. Laurea (Bachelors Degree) in Computer Science and Engineering, Department of Engineering, University Roma Tre.

2015–present

Lecturer for “Advanced Topics in Computer Science”. Laurea Magistrale (Masters Degree) in Computer Science and Engineering, Department of Engineering, University Roma Tre.

2012–2017

Lecturer for “Elements of Computer Science”. Laurea (Bachelors Degree) in Mechanical Engineering, Department of Engineering, University Roma Tre.

2007, 2009–2015

Lecturer for “Parallel and Distributed Computing”. Laurea Specialistica (Masters Degree) in Computer Science and Engineering, Department of Engineering, University Roma Tre.

2007–2008

Post-Doctoral fellow at the Department of Studies on Structures, College of Engineering, University Roma Tre, Rome, Italy.

2005–2006

Teaching Assistant for “Concurrent Programming” (2005–2006) and “Parallel and Distributed Computing” (2004–2006). Laurea Specialistica (Masters Degree) in Computer Science and Engineering, College of Engineering, University Roma Tre.

2005

Lecturer for the lessons “Software Management”. Masters in Complex Systems in Metropolitan Mobility, University Roma Tre.

6.1 Personal Skills

Native Languages:	Italian
Other Languages:	English, fluent written and spoken (EU Class C2)
Programming:	C++, C, Lua, Java, Pascal, Assembly (x86), ML, Scheme, Lisp, Erlang, Objective-C, FORTRAN
Scripting:	UNIX Shell, Python, JavaScript, Mathematica, Matlab, HTML, PHP
Operating Systems:	UNIX (AIX, Solaris, MacOS X), Linux, Windows, iOS, Android

7 Additional Information

Visiting graduate student at the Spatial Automation Laboratory, Department of Mechanical Engineering, University of Wisconsin-Madison, USA, 2003–2005.

Member of the Italian Order of Engineers (Board Exam 2003).

IBM EMEA University Relations Student Recognition Event, IBM Hursley, UK, December 2003.

7.1 Personal Interests

Classical piano, Japanese language and culture, Classical guitar, Orienteering, Hiking.