Danilo Pianini

CONTACTS

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47521 Cesena (FC)
Italy

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OBJECTIVE

Placement in an academic position that allows for advanced research in pervasive computing (i.e., modeling, analysis, design, and verification) with a particular focus on simulation.

CITIZENSHIP

Italy

RESEARCH THEMES

My current research is focussed on the engineering aspects of pervasive computing, with the goal of providing a robust, easy, and coherent chain of tools and procedures that can lead to robust, adaptive, self-healing, and possibly evolving software ecosystems. I recently got fascinated by aggregate programming, namely all the languages and techniques that enable the programming of groups of devices as a single entity distributed in space and time.

EDUCATION

Dipartimento di Ingegneria Elettronica, Informatica e delle Telecomunicazioni, Università di Bologna, Bologna (BO), Italy

Ph.D. in Electronics, Computer Science and Telecommunications Engineering,

- Thesis Title: *Engineering Complex Computational Ecosystems*
- Supervisor: Prof. Mirko Viroli
- Tutor: Prof. Antonio Natali
- External reviewer: Prof. Giovanna di Marzo Serugendo
- External reviewer: Prof. Simon Dobson
- Area of Study: Pervasive computing

Seconda Facoltà di Ingegneria, Università di Bologna, Cesena (FC), Italy

M.S., Computer Engineering, March 2011

- *110L/110 - Magna cum Laude*
- Thesis Topic: *A Framework for Simulation of Pervasive Services Ecosystems*
- Supervisor: Dr. Mirko Viroli
- Area of Study: Computational Models

B.S., Computer Engineering, October 2008

- Thesis Topic: *From Swarm Intelligence to Self-Organising Coordination: a Pervasive Scenarios Application*
- Supervisor: Prof. Andrea Omicini
- Area of Study: Distributed Systems

ITCG L. Einaudi, Novafeltria (RN), Italy

Scientific high school, focus on biology, July 2005

- 100/100

Publications ordered by time

[1] D. Pianini, S. Virruso, R. Menezes, A. Omicini, and M. Viroli, "Self organization in coordination systems using a wordnet-based ontology," in *Fourth IEEE International Conference on Self-Adaptive and Self-Organizing Systems, SASO 2010, Budapest, Hungary, 27 September - 1 October 2010*, 2010, pp. 114–123. [Online]. Available: http://dx.doi.org/10.1109/SASO.2010.35

[2] D. Pianini, M. Viroli, and S. Montagna, "A simulation framework for pervasive services ecosystems," in *Proceedings of the 12th Workshop on Objects and Agents, Rende (CS), Italy, Jul 4-6, 2011*, 2011, pp. 150–157. [Online]. Available: http://ceur-ws.org/Vol-741/ID15_PianiniViroliMontagna.pdf

[3] S. Montagna, M. Viroli, M. Risoldi, D. Pianini, and G. D. M. Serugendo, "Self-organising pervasive ecosystems: A crowd evacuation example," in *Software Engineering for Resilient Systems - Third International Workshop, SERENE 2011, Geneva, Switzerland, September 29-30, 2011. Proceedings*, 2011, pp. 115–129. [Online]. Available: http://dx.doi.org/10.1007/978-3-642-24124-6_12

[4] D. Pianini, S. Montagna, and M. Viroli, "A chemical inspired simulation framework for pervasive services ecosystems," in *Federated Conference on Computer Science and Information Systems - FedCSIS 2011, Szczecin, Poland, 18-21 September 2011, Proceedings*, 2011, pp. 667–674. [Online]. Available: http://fedcsis.eucip.pl/proceedings/pliks/98.pdf

[5] S. Montagna, D. Pianini, and M. Viroli, "Gradient-based self-organisation patterns of anticipative adaptation," in *Sixth IEEE International Conference on Self-Adaptive and Self-Organizing Systems, SASO 2012, Lyon, France, September 10-14, 2012*, 2012, pp. 169–174. [Online]. Available: http://dx.doi.org/10.1109/SASO.2012.25

[6] ——, "A model for drosophila melanogaster development from a single cell to stripe pattern formation," in *Proceedings of the ACM Symposium on Applied Computing, SAC 2012, Riva, Trento, Italy, March 26-30, 2012*, 2012, pp. 1406–1412. [Online]. Available: http://doi.acm.org/10.1145/2245276.2231999

[7] M. Viroli, D. Pianini, S. Montagna, and G. Stevenson, "Pervasive ecosystems: a coordination model based on semantic chemistry," in *Proceedings of the ACM Symposium on Applied Computing, SAC 2012, Riva, Trento, Italy, March 26-30, 2012*, 2012, pp. 295–302. [Online]. Available: http://doi.acm.org/10.1145/2245276.2245336

[8] M. Viroli, D. Pianini, and J. Beal, "Linda in space-time: An adaptive coordination model for mobile ad-hoc environments," in *Coordination Models and Languages - 14th International Conference, COORDINATION 2012, Stockholm, Sweden, June 14-15, 2012. Proceedings*, 2012, pp. 212–229. [Online]. Available: http://dx.doi.org/10.1007/978-3-642-30829-1_15

[9] B. Anzengruber, D. Pianini, J. Nieminen, and A. Ferscha, "Predicting social density in mass events to prevent crowd disasters," in *Social Informatics - 5th International Conference, SocInfo 2013, Kyoto, Japan, November 25-27, 2013, Proceedings*, 2013, pp. 206–215. [Online]. Available: http://dx.doi.org/10.1007/978-3-319-03260-3_18

[10] G. Stevenson, J. Ye, S. Dobson, D. Pianini, S. Montagna, and M. Viroli, "Combining self-organisation, context-awareness and semantic reasoning: the case of resource discovery in opportunistic networks," in *Proceedings of the 28th Annual ACM Symposium on Applied Computing, SAC '13, Coimbra, Portugal, March 18-22, 2013*, 2013, pp. 1369–1376. [Online]. Available: http://doi.acm.org/10.1145/2480362.2480619

[11] D. Pianini, S. Montagna, and M. Viroli, "Chemical-oriented simulation of computational systems with ALCHEMIST," *J. Simulation*, vol. 7, no. 3, pp. 202–215, 2013. [Online]. Available: http://dx.doi.org/10.1057/jos.2012.27

[12] D. Pianini, M. Viroli, F. Zambonelli, and A. Ferscha, "HPC from a self-organisation perspective: The case of crowd steering at the urban scale," in *International Conference on High Performance Computing & Simulation, HPCS 2014, Bologna, Italy, 21-25 July, 2014*, 2014, pp. 460–467. [Online]. Available: http://dx.doi.org/10.1109/HPCSim.2014.6903721

[13] D. Pianini, S. Sebastio, and A. Vandin, "Distributed statistical analysis of complex systems modeled through a chemical metaphor," in *International Conference on High Performance Computing & Simulation, HPCS 2014, Bologna, Italy, 21-25 July, 2014*, 2014, pp. 416–423. [Online]. Available: http://dx.doi.org/10.1109/HPCSim.2014.6903715

[14] F. Zambonelli, A. Omicini, B. Anzengruber, G. Castelli, F. L. D. Angelis, G. D. M. Serugendo, S. A. Dobson, J. L. Fernandez-Marquez, A. Ferscha, M. Mamei, S. Mariani, A. Molesini, S. Montagna, J. Nieminen, D. Pianini, M. Risoldi, A. Rosi, G. Stevenson, M. Viroli, and J. Ye, "Developing pervasive multi-agent systems with nature-inspired coordination," *Pervasive and Mobile Computing*, vol. 17, pp. 236–252, 2015. [Online]. Available: http://dx.doi.org/10.1016/j.pmcj.2014.12.002

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[16] ——, "A gillespie-based computational model for integrating event-driven and multi-agent based simulation: Extended abstract," in *Proceedings of the 2015 International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2015, Istanbul, Turkey, May 4-8, 2015*, 2015, pp. 1763–1764. [Online]. Available: http://dl.acm.org/citation.cfm?id=2773424

[17] F. Damiani, M. Viroli, D. Pianini, and J. Beal, "Code mobility meets self-organisation: A higher-order calculus of computational fields," in *Formal Techniques for Distributed Objects, Components, and Systems - 35th IFIP WG 6.1 International Conference, FORTE 2015, Held as Part of the 10th International Federated Conference on Distributed Computing Techniques, DisCoTec 2015, Grenoble, France, June 2-4, 2015, Proceedings*, 2015, pp. 113–128. [Online]. Available: http://dx.doi.org/10.1007/978-3-319-19195-9_8

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[22] D. Pianini, A. Croatti, A. Ricci, and M. Viroli, "Computational fields meet augmented reality: Perspectives and challenges," in *2015 IEEE International Conference on Self-Adaptive and Self-Organizing Systems Workshops, SASO Workshops 2015, Cambridge, MA, USA, September 21-25, 2015*, 2015, pp. 80–85. [Online]. Available: http://dx.doi.org/10.1109/SASOW.2015.18

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[51] R. Casadei, D. Pianini, G. Salvaneschi, and M. Viroli, "On context-orientation in aggregate programming," in *4th eCAS Workshop on Engineering Collective Adaptive Systems*, 2019, to appear.

[52] D. Pianini, R. Casadei, and M. Viroli, "Security in collective adaptive systems: a roadmap," in *4th eCAS Workshop on Engineering Collective Adaptive Systems*, 2019, to appear.

Certifications

Abilitazione Scientifica Nazionale al ruolo di professore di II fascia
Italian Ministry of Education, Universities and Research
Starting 2018-07-26, ending 2024-07-26

Editorial activity

IEEE Software Blog: associate blog editor — 2019 –

Scientific programming: academic editor — 2017 –

The Future of Digital Democracy – An Interdisciplinary Approach (ISBN 978-3-030-05333-8): editor – 2019

Service in international conferences

12th International Conference on Agents and Artificial Intelligence (ICAART 2020)
Program Committee member

4th Workshop on Engineering Collective Adaptive Systems, (eCAS 2019)
Program Committee member

International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2019)
Program Committee member

11th International Conference on Agents and Artificial Intelligence (ICAART 2019)
Program Committee member

Next Generation Programming Languages and Systems (NGPS 2019) — Track of the 34th ACM Symposium on Applied Computing (SAC 2019)
Track co-chair

COORDINATION 2019 - 21st International Conference on Coordination Models and Languages
Program Committee member

XIX Workshop "From Objects to Agents" (WOA 2018)
Program Committee member

12th IEEE International Conference on Self-Adaptive and Self-Organizing (SASO 2018)
Workshops and tutorials chair

15th IEEE International Conference on Autonomic Computing (ICAC 2018)
Workshops and tutorials chair

Collective and Cooperative Systems — Special Track of the 33rd ACM Symposium on Applied Computing (SAC 2018)
Program Committee member, session chair

1st workshop on Architectures, Languages and Paradigms for IoT (ALP4IoT 2017)
Program Committee chair

2nd eCAS Workshop on Engineering Collective Adaptive Systems (eCAS 2017)
Program Committee member

XVIII WORKSHOP "From Objects to Agents" (WOA 2017)
Program Committee member

Reviewing for international journals

Sensors, 2016-2019

Artificial Intelligence Review (AIRE), 2019

Mathematical Problems in Engineering, 2017-2019

Applied sciences, 2018

The Computer Journal, 2018

Artificial Intelligence in Medicine, 2018

Computational and Structural Biotechnology Journal, 2016

Communications of the ACM, 2016

Talks in international conferences

Self-organising Coordination Regions: a pattern for edge computing
21st International Conference on Coordination Models and Languages (COORDINATION 2019)

Security in Collective Adaptive Systems: a Roadmap
4th eCAS Workshop on Engineering Collective Adaptive Systems (eCAS 2019)

Computing at the Aggregate Level
Workshop "Making the smart city safe for citizens: The case of smart energy and mobility"

Engineering the Aggregate
GI Dagstuhl Seminar "Software Engineering for Intelligent and Autonomous Systems" (SEfIAS 2018)

Themes and Challenges in Engineering CAS
Panelist at the *2nd eCAS Workshop on Engineering Collective Adaptive Systems (eCAS 2017)*

Practical Aggregate Programming with Protelis
Tutorial at the *11th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2017)*

Towards a Foundational API for Resilient Distributed Systems Design
2nd eCAS Workshop on Engineering Collective Adaptive Systems (eCAS 2017)

Simulating Large-scale Aggregate MASs with Alchemist and Scala
10th International Workshop on Multi-Agent Systems and Simulation (MAS&S 2016)

Computational Fields meet Augmented Reality: Perspectives and Challenges
1st Workshop on Spatial and COllective PErvasive Computing Systems (SCOPES 2015)

Engineering multi-agent systems with aggregate computing
Demo at the *18th Conference on Principles and Practice of Multi-Agent Systems (PRIMA 2015)*

Extending the Gillespie's Stochastic Simulation Algorithm for Integrating Discrete-Event and Multi-Agent Based Simulation
XVI International Workshop on Multi-Agent Based Simulation (MABS 2015)

Protelis: Practical Aggregate Programming
The 30th ACM/SIGAPP Symposium On Applied Computing (SAC 2015)

Gradient-based Self-organisation Patterns of Anticipative Adaptation
6th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2012)

A Chemical Inspired Simulation Framework for Pervasive Services Ecosystems
5th International Workshop on Multi-Agent Systems and Simulation (MAS&S 2011)

Self Organization in Coordination Systems using a WordNet-based Ontology
Fourth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2010)

Other talks

From Nature Inspiration to Aggregate Computing
Seminar for "Open Your Mind", 2019

Continuous integration and delivery
Seminar for the "Programming and development paradigms" course, 2016

Democratic process and electronic platforms: concerns of an engineer
Workshop "The Future of Democracy", 2016

Software development made serious
Seminar for the "Adaptive complex software systems engineering" course, 2016

Engineering Complex Computational Ecosystems
PhD defense, 2015

Engineering computational ecosystems
2nd year PhD seminar, 2013

From Engineer to Alchemist, There and Back Again: An Alchemist Tale
Seminar for the "Laboratory of systems and applications LM" course, 2012

Engineering computational ecosystems
Vieni via con noi, 2012, Cesena

Recipes for Sabayon: cook your own Linux distro within two hours
Linux Day 2012, Cesena

The simulation alchemy
Seminar for the "Laboratory of systems and applications LM" course, 2011

A Simulation Framework for Pervasive Service Ecosystems
XII Workshop "Dagli Oggetti agli Agenti" (WOA 2010)

Teaching

Alma Mater Studiorum Università di Bologna, Bologna (BO), Italy

Post-doc **since January 2015**

- Co-Supervisor Nicolas Barilari's bachelor thesis: *Programmazione Reattiva in Kotlin su sistemi Android*, 2018.
- Co-Supervisor Luca Casamenti's bachelor thesis: *Il linguaggio Ceylon*, 2018.
- Co-Supervisor Davide Bondi's bachelor thesis: *Protocollo LoRaWAN e IoT: interfacciamento con Java e sperimentazione su comunicazioni indoor*, 2018.
- Professor for *Developing, Maintaining, and Sharing Software Tools for Research*, doctoral course for the PhD in Data Science and Computation, XXXIII cycle, 2018.
- Co-Supervisor Matteo Magnani's bachelor thesis: *Design e implementazione di un sistema di grid computing per il simulatore Alchemist*, 2017.
- Co-Supervisor Niccolò Maltoni's bachelor thesis: *Progettazione object-oriented di un'interfaccia grafica JavaFX per il simulatore Alchemist*, 2017.
- Co-Supervisor Luca Semprini's bachelor thesis: *Una panoramica su Kotlin: il nuovo linguaggio per lo sviluppo di applicazioni Android*, 2017.
- Co-Supervisor Andrea Placuzzi's bachelor thesis: *Integrazione dei formati di navigazione GPS standard in Alchemist*, 2017.
- Co-Supervisor Giacomo Scaparrotti's bachelor thesis: *Studio delle prestazioni del simulatore Alchemist: ottimizzazione di routing e caching*, 2017.
- Co-Supervisor Matteo Francia's master thesis: *A Foundational Library for Aggregate Programming*, 2017.
- Contract Professor for the course "Object-Oriented Programming", 2017.
- Contract Professor for the course "Object-Oriented Programming", 2016.
- Co-Supervisor Elisa Casadio's bachelor thesis: *Revisione e refactoring dell'interfaccia utente del simulatore Alchemist*, 2016.
- Co-Supervisor Gianluca Grossi's bachelor thesis: *Sviluppo di plugin per IntelliJ*

IDEA, 2016.
- Co-Supervisor Simone Costanzi's master thesis: *Integrazione di piattaforme d'esecuzione e simulazione in una toolchain Scala per aggregate programming*, 2016.
- Co-Supervisor Giovanni Romio's bachelor thesis: *Backport di una applicazione da Java 8 a Java 7*, 2016.
- Contract Professor for the course "Complex Adaptive Software System Engineering", 2016.
- Seminar "Software development made serious", 2016
- Teaching assistant for the course "Object-Oriented Programming", 2015.
- Contract Professor for the course "Computer Science Foundations A", 2015.
- Teaching assistant for the course "Complex Adaptive Software System Engineering", 2015.

PhD Student **January 2012 to December 2014**

- Teaching assistant for the course "Object Oriented Programming", 2014.
- Teaching assistant for the course "Complex Adaptive Software System Engineering ", 2014.
- Teaching assistant for the course "Object Oriented Programming", 2013.
- Teaching assistant for the course "Computer Science Foundations A", 2013.
- Co-Supervisor Davide Ensini's master thesis: *Spatial computing per smart devices*, 2014.
- Co-Supervisor Luca Nenni's master thesis: *Simulazioni realistiche di algoritmi di Crowd Steering*, 2014.
- Co-Supervisor Enrico Polverelli's master thesis: *Simulazione di algoritmi di auto-organizzazione basati su gradiente computazionale in Alchemist*, 2012.
- Co-Supervisor Andrea Dallatana's master thesis: *BDI agents for Real Time Strategy games*, 2012.
- Co-Supervisor Francesca Cioffi's master thesis: *Algoritmi gradient-based per la modellazione e simulazione di sistemi auto-organizzanti*, 2012.
- Co-Supervisor Paolo Contessi's master thesis: *Supporting semantic web technologies in the pervasive service ecosystems middleware*, 2012.
- Co-Supervisor Giacomo Pronti's master thesis: *Simulazione di ecosistemi di servizi pervasivi con supporto ad annotazioni tuple based*, 2012.
- Co-Supervisor Francesco Cardi's bachelor thesis, 2012.
- Seminar "From Engineer to Alchemist, There and Back Again: An Alchemist Tale", 2012
- Seminar "The simulation alchemy", 2011

Contract Researcher **June 2011 to December 2012**

- Contract professor for the course "Laboratory of Multi Agent Systems", 2011.
- Co-Supervisor in Michele Morgagni's master thesis: *Modulo di comunicazione in una infrastruttura per pervasive service ecosystems*, 2011.
- Co-Supervisor in Matteo Desanti's master thesis: *Supporto a regole chimico-semantiche per la coordinazione di service pervasive ecosystems*, 2011.

Bologna Business School, Bologna (BO), Italy

Professor **October 2018 to December 2018**

- *Internet of Things – Software production* — advanced course on techniques for producing high quality software for the IoT. Focus on team coordination strategies and tools, build automation, testing, continuous integration, and continuous delivery

FORMart, Cesena (FC), Italy

Teacher **January 2016 to March 2019**

- *"Internet of Things" — Introduction to distributed computing and to the Internet of Things, with focus on Industry 4.0*
- *"Programmazione e ICT problem solving" — course on algorithmic problem resolution and automation, with elements of programming in Python*
- *"Sistemi informatici e loro gestione" — course on basics of operating systems, networking, and database management*
- *"Elementi di Programmazione e Sviluppo di Applicazioni" — course on imperative and object oriented programming with C and Java*

University of Iowa, Iowa City, IA USA

Visiting Researcher **August 2014 to September 2014**

- Seminar "Programming Networks from the Aggregate Perspective"

Florida Institute of Technology, Melbourne, FL USA

Visiting Researcher **July 2009 to October 2009**

- Seminar "Self Organization in Coordination Systems using a Wordnet-based Ontology", along with Sascia Virruso, under the supervision of Dr. Ronaldo Menezes

Awards

Best Paper Award, **SASO 2016**, Augsburg, Germany

International experience

University of Iowa, Iowa City, IA USA

Visiting Researcher **May 2016, to June 2016**

- Advancements in the aggregate programming field.
- UIowa supervisor: Dr. Jacob Beal
- UniBo supervisor: Prof. Mirko Viroli

University of Iowa, Iowa City, IA USA

Visiting Researcher **August 2014, to September 2014**

- Research on aggregate programming and high order functions for field calculus. Refinement of Protelis.
- UIowa supervisor: Dr. Jacob Beal
- UniBo supervisor: Prof. Mirko Viroli

Raytheon BBN Technologies, Cambridge, MA USA

Visiting Researcher **June 2014, to August 2014**

- Research on aggregate programming and high order functions for field calculus. Realisation of Protelis.
- BBN supervisor: Dr. Jacob Beal
- UniBo supervisor: Prof. Mirko Viroli

Johannes Kepler Universität, Linz, Austria

Visiting Researcher **July 2013, to October 2013**

- Research on crowd density estimation and prediction, crowd steering, crowd simulation, pervasive ecosystems.
- JKU supervisor: Univ.-Prof. Mag. Dr. Alois Ferscha
- UniBo supervisor: Prof. Mirko Viroli

Florida Institute of Technology, Melbourne, FL USA

Visiting Researcher **July 2009 to October 2009**

- Research on distributed systems, complex networks and self organisation
- FIT supervisor: Dr. Ronaldo Menezes
- UniBo supervisor: Prof. Andrea Omicini

Professional Experience

twinlogix, Santarcangelo di Romagna (RN), Italy

Software development **March 2016 to January 2017**

Valpharma International S.p.A., Pennabilli (RN), Italy

Stage: raw material quality control **July 2004 to August 2004**

Other activities

Frequent contributor to Wikipedia and OpenStreetMap.

Designer and leading developer of Protelis, 2014–today

- Protelis is a programming language aiming at making networked systems just as easy to build for complex and heterogeneous networks as for single machines and cloud systems. This accomplished by separating the different tasks and making some of the hard and subtle parts automatic and implicit.

Designer and leading developer of Alchemist, 2010–today

- Alchemist is an innovative simulator meant to join the expressiveness of the agent based modelling and the power and speed of the stochastic simulation algorithms used in chemistry. It is tailored to scenarios in which many nodes interact exchanging informations. Its flexibility allows for a wide range of applications, spacing from the classical chemistry to the biology (e.g. complex morphogenesis processes) to pervasive computing.

Designer and developer of Git sensitive Semantic Versioning (SemVer) Gradle Plugin, 2019–today

- A Gradle plugin that applies Semantic Versioning to projects based on the status of the git repository.

Designer and developer to maven-central-gradle-plugin, 2019–today

- A Gradle plugin for streamlined publishing on Maven Central

Contributor to TornadoFX, porting from JDK8 to JDK11+, 2019

- TornadoFX is a Kotlin DSL for building rich graphical applications with JavaFX.

Creator and maintainer of the following Arch User Repository Packages, 2018–today

- `opencorsairlink-git`.
- `opencorsairlink-testing-git`.

Contributor to Thread-inheritable resource loader for Java, 2017–today

- A statically-usable resource and class loader that inherits the parent thread's class loader.

Contributor to gson-extras, 2017–today

- Extra libraries and component for Google Gson, extracted from the main repository and made publicly available on Maven Central.

Designer and developer of JIRF, 2017–today

- The Java Implicit Reflective Factory allows for building objects reflectively inside configured contexts, applying implicit type conversions chains when needed.

Designer and leading developer of URLClassloader Util, 2016–today
- URLClassloader Util is a small library that provides functionality to manipulate the Java classpath at runtime.

Designer and leading developer of Javadoc.io Linker, 2016–today
- Javadoc.io linker is a Gradle plugin that configures any Javadoc build to link javadoc.io when referring to non-local classes.

Contributor to GoIV, 2017
- GoIV is an Android application devoted to rating the quality of Pokémon Go monsters relying solely on the on-screen information.

Contributor to Cnchi, 2015
- Cnchi is a modern, flexible installer for Linux, developed by the Antergos Linux team.

Designer and developer of SmarTrRR, 2015–2017
- SmarTrRR is a transitive dependency range resolver plugin for Gradle. It replaces the default Protelis resolver, implementing a progressive range restriction, and a conflict resolution algorithm. Also, it allows the user to configure specific artifact substitutions.

Creator and maintainer of Nirvana overlay for Gentoo Linux, 2014–2015
- Nirvana is an overlay for Gentoo Linux, namely a container of ebuild files, which are scripts describing how to install and maintain packages in a Gentoo Linux distribution. Nirvana contains those ebuild that work well, but are too hard to maintain to be pushed in Sunrise or Sabayon overlays. Moreover, this repository is used by me as a playground for creating new ebuilds. On July 2014 Nirvana got officially indexed by Layman, and as a consequence it is now available to all Gentoo users using such tool.

Creator and maintainer of Nirvana Community Repository, 2014–2015
- Nirvana Community Repository contains the same packages included in Nirvana overlay, distributed in a pre-compiled form compatible with Sabayon Linux Entropy package manager.

Designer and developer of Angela the Mandelbrot Set Explorer, 2009
- Angela is a Java parallel application that allows for visualizing portions of the Mandelbrot set.

Member of both the testing and development teams of Sabayon Linux, 2008–2014
- Sabayon Linux is a Gentoo-based distribution which follows the works-out-of-the-box philosophy, aiming to give the user a wide number of applications that are ready for use and a self-configured operating system.

A.St.I.Ce. Executive Board Member, January 2006 to November 2009
- Founded "I^2 — Informa Ingegneri", the technical journal of Seconda Facoltà di Ingegneria, containing articles about the research activity of the faculty.
- Founded "Linux Libera Tutti", a project meant to allow students access without any charge DVDs and CDs of various Linux distributions, with a special focus on Sabayon Linux.

Skills

Computer Programming and software design:
- Java, Scala, Kotlin, C, Python, Prolog, Groovy, C++, UNIX shell scripting, SQL, Xtend, and others.
- Language design with the Xtext framework
- Object Oriented design

- Distributed systems
- Concurrent programming
- Functional programming
- Mobile programming (Android)

Software engineering and productive teamwork:
- Distributed Version Control Systems (Mercurial, Git)
- Build systems (Gradle, Maven)
- Continuous Integration (Travis CI, drone.io)
- Automated software deployment

Hardware/software configuration:
- Windows installation and configuration
- Linux installation and configuration for personal computers, servers, and embedded systems with specific skills for Gentoo Linux, its derivatives and Arch Linux.
- Server and Desktop systems assembling
- Overclocking

Information/Internet Technology:
- Markup languages (XML, HTML, Markdown)
- Database manipulation with SQL
- Networking (UDP, TCP, ARP, DNS)
- Services (SQL, HTTP, application-specific daemon design)
- Content Managing (Joomla, Drupal)
- Static website generators (Jekyllrb)

Operating Systems:
- Linux, with specific skills for Gentoo, Sabayon and Arch
- other UNIX variants
- Microsoft Windows family

Productivity Applications:
- LaTeX, BibTeX
- Common productivity packages (for Windows and Linux platforms)

Multimedia (basic knowledge):
- Scalar image editing and analysis (Computer Vision skills, Photoshop, GIMP)
- Vectorial image editing (Dia, Inkscape)
- RAW image processing
- Non-linear video editing (Kdenlive, Openshot)
- 3D Design (Blender)
- 3D Programming (OpenGL)

Expertise

Mathematics:
- Applied Mathematics, Real and Complex Analysis, Discrete Mathematics, Geometry.

Physics:
- Mechanics, Electromagnetism.

Control Theory and Engineering:
- Distributed and Self-adaptive Control, Dynamic Optimization, Bio-mimicry, Bio-inspiration.

Communications and Signal Processing:
- Probability, Random Variables, Stochastic Processes, Networks

Computer Science and Engineering:

- Model Checking, Software Verification, Component-Based Reusable Software, Object Oriented Programming, Logic Programming, Functional Programming, Concurrent Programming, Distributed Systems, Benchmarking, Model Driven Software Development.

Natural Sciences (Biology, Microbiology, Chemistry, Biochemistry):

- Molecular orbital theory, stoichiometry, organic chemistry, DNA transcription and replication processes, PCR, metabolic processes, virus classification, bacteria classification, human morphology, physiology, Earth sciences, astronomy.

References Available to Contact

Dr. Jacob Beal (e-mail: jakebeal@alum.mit.edu; phone: +1 617 873 7676)

- Scientist, Raytheon BBN Technologies
  - ◇ 10 Moulton Street, Cambridge, MA 02138, USA
  - ⋆ *Dr. Beal was my local supervisor during my research period in Cambridge and Iowa City*

Prof. Andrea Omicini (e-mail: andrea.omicini@unibo.it; phone: +39 0547 3 39220)

- Full Professor, Dipartimento di Informatica – Scienza e Ingegneria
  Alma Mater Studiorum Università di Bologna
  - ◇ Via Venezia 52, 47521 Cesena (FC), Italy
  - ⋆ *Prof. Omicini was my supervisor for Bachelor Thesis and my Italian supervisor during the research period in Florida Tech*

Prof. Mirko Viroli (e-mail: mirko.viroli@unibo.it; phone: +39 0547 3 39216)

- Associate Professor, Dipartimento di Informatica – Scienza e Ingegneria
  Alma Mater Studiorum Università di Bologna
  - ◇ Via Venezia 52, 47521 Cesena (FC), Italy
  - ⋆ *Dr. Viroli was my supervisor for Master Thesis and PhD*

June 26, 2019