Giuseppe Petrosino
Computer Scientist
& Engineer

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Online version (with some more stuff):
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What I use / love to work with

`Kotlin` `Java` `C++` `macOS` `Android` `TypeScript` `Git` `LaTeX`

Education

- PhD Candidate in Industriual Innovation Engineering @ University of Modena and Reggio Emilia, Italy, (XVIII cycle, 2021 - now)

- M.Sc. in Computer Engineering (cum laude) @ University of Parma, Parma, Italy (Academic Year 2019-20)

- B.Sc. in Computer Science @ University of Parma, Parma, Italy (Academic Year 2017-18)

- High School Diploma (Maturità Scientifica) @ Liceo Publio Virgilio Marone (Vico del Gargano, Italy) (School Year 2011-12)

Research Projects

Jadescript

2017 - now
GitHub repo

Jadescript is a programming language for *Multi Agent Systems* (MASs) development for the JADE Platform. Started with AI Lab of University of Parma, this project aims to design an agent-oriented programming language. It includes the implementation of a set of tools built in Java and the Xtext Framework, which comprises a compiler and an Eclipse IDE plugin. The language provides a new way of programming easily scalable, performant and intelligent distributed systems by encouraging the use of the behavioral agent model of computation, which defines a new paradigm to achieve event-driven programming with asynchronous communication and naming/location transparency of processing nodes. The language is syntactically strongly inspired by

agent pseudocode, and it is enriched by some advanced features like declarative pattern matching, expression type and variable declaration inferring, semantically relevant whitespace parsing *à la Python*.

Agent-Oriented Programming Programming Language Design Java Xtext

ActoDatA

2020 - now

ActoDatA (Actor Data Analysis) is a novel actor-based software library for Java and Kotlin, built on top of ActoDeS, created in collaboration with SoWIDE research group. ActoDatA proposes a new design model oriented to the development of data analysis (DA) and machine learning (ML) applications, and it is specifically designed to lift some of the programmer's burden when creating complex distributed DA and ML applications in Java and Kotlin. It does so by modeling distributed systems around the concepts of *acquirer*, *preprocessor*, *engine*, *controller*, *dataset manager*, *reporter* and *master* actors, which generalize and bring into the actor-based world some known concepts from other widely adopted distributed DA and ML technologies.

Actor-based programming Data Analysis Machine Learning Java Kotlin

SmcGP-Islands

2021 - now

SmcGP-Islands is an ensemble machine learning system used to evolve efficient classifiers of low-resolution binary images of characters. Its name comes from *Sub-machine code* (Smc, i.e., a technique that uses the intrinsic parallelism of bitwise low-level instructions in modern CPUs to significantly increase computation speed), *Genetic Programming* (GP, i.e., an evolutionary computation paradigm where individuals that encode LISP-like programs are iteratively improved by evaluating their *fitnesses*, *selecting* the fittest individuals and generating new populations via *crossover* and *mutation* operations) and the Island Model (it organizes the evolution of individuals in isolated sub-populations in which migratory phenomena can occur between iterations, in order to decrease execution time and better explore the solution space in an optimization problem). Several versions of the system were created and compared, one of which was created with ActoDatA.

Genetic programming Evolutionary Computing Machine learning

Publications

- **Island Model in ActoDatA: an actor-based Implementation of a classical Distributed Evolutionary Computation Paradigm**

  G. Petrosino, F. Bergenti, G. Lombardo, M. Mordonini, A. Poggi, M. Tomaiuolo, S. Cagnoni - in 2021 Genetic and Evolutionary Computation Conference Companion (GECCO '21 Companion)

  ACM Press

- **Exploratory Experiments on Programming Autonomous Robots in Jadescript**

  E. Iotti, G. Petrosino, S. Monica, F. Bergenti - in Procs. AREA 2020

- **Two Agent-Oriented Programming Approaches Checked Against a Coordination Problem**

  E. Iotti, G. Petrosino, S. Monica, F. Bergenti - in Procs. DCAI 2020

Advances in Intelligent Systems and Computing, Springer

- **Extending Message Handlers with Pattern Matching in the Jadescript Programming Language**

  G. Petrosino, F. Bergenti - in Procs. 20th Workshop "From Objects to Agents" WOA 2019

  CEUR Workshop Proceedings

- **A Scripting Language for Practical Agent-Oriented Programming**

  F. Bergenti, S. Monica, G. Petrosino - in Procs. AGERE! 2018

  ACM Press

- **An Introduction to the Major Features of a Scripting Language for JADE Agents**

  G. Petrosino, F. Bergenti - in Procs. AI*IA 2018 - Main Track

  Advances in Artificial Intelligence, Springer

- **Overview of a Scripting Language for JADE-Based Multi-Agent Systems**

  F. Bergenti, G. Petrosino - in Procs. 19th Workshop "From Objects to Agents" WOA 2020

  CEUR Workshop Proceedings

Conference Presentations

Workshop From Objects to Agents (WOA 2018)
Palermo, June 28th-29th, 2018
Title: _Overview of a Scripting Language for JADE-Based Multi-Agent Systems_

AI*IA 2018
Trento, November 20th-23rd, 2018
Title: _An Introduction to the Major Features of a Scripting Language for JADE Agents_

Workshop From Objects to Agents (WOA 2019)
Parma, June 26th-28th, 2019
Title: _Extending Message Handlers with Pattern Matching in the Jadescript Programming Language_

GECCO 2021
Lille, July 10th-14th 2021
Title: _Island Model in ActoDatA: an actor-based Implementation of a classical Distributed Evolutionary Computation Paradigm_

Experience

Short Research Fellow @ Future Technology Lab (University of Parma)
mar 2021 - now

Student Tutor for "Programming Fundamentals A+B" and "Algorithms and Data Structures 1" @ Dpt. of Mathematical, Physical and Computer Sciences

4 semesters, 2018 - 2020

The books I'm reading right now

=> *Godel, Escher, Bach: An Eternal Golden Braid* by Douglas Hofstadter

=> *Why Everyone (else) Is a Hypocrite* by Robert Kurzban

Hobbies

I used to compose electronic music a while ago, under the pseudonym Parsley Joe.
Listen

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