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Online version: https://ParsleyJ.github.io/mycv

Kotlin	++++	Java	++++	C++	+++	macOS	++++	Android	++++	TypeScript	++

Research Projects

Jadescript

2017 - now

Jadescript is a novel programming language for *Multi Agent Systems* (MASs) development for the JADE Platform. Started in collaboration with AI Lab of University of Parma, this project aims to design an agent-oriented programming language. It also contemplates the implementation of a set of tools built in Java and the Xtext Framework to ease the development in this new language. This set of tools includes 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 realize event-driven programming with asynchronous communication and naming/location transparency of processing nodes. The language is enriched by some advanced features like declarative pattern matching, expression type and variable declaration inferring, flow-sensitive typing, 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).

Genetic programming | Evolutionary Computing | Machine learning

Additional Experience

Short Research Fellow @ Future Technology Lab (University of Parma)

mar 2021 - now

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

4 semesters, 2018 - 2020

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

Education

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

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

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