

Giuseppe Muntoni

M.Sc. COMPUTER SCIENCE STUDENT · SOFTWARE ENGINEER

Pisa, Italy

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Work Experience

Consorzio Metis

SOFTWARE ENGINEER | **JAVA, JMIX, POSTGRESQL**

Pisa, Italy

June, 2022 - Ongoing

- Developed management applications to support the Tuscany region and the Pisa hospital.

AgileLab

BIG DATA ENGINEER | **SCALA, APACHE SPARK, APACHE KAFKA, APACHE HIVE, HADOOP HDFS**

Remote

January, 2022 - June, 2022

- Supplied the migration of all streaming applications to a new virtual environment, achieving 100% data alignment between the two environments, using platforms like Apache Hive, Apache Kafka, and Hadoop HDFS.
- Member of the Code Quality group, monitoring and compiling the quality metrics of twelve applications altogether, achieving test coverage of more than 95% on average, and the availability of technical documentation for each application.
- Engineered and programmed a code generation tool that generates boilerplate code of Spark jobs, which reduces the written lines of code and the development time.

OneTag

SOFTWARE ENGINEER | **JAVA, SCALA, ECLIPSE VERT.X, AEROSPIKE, KUBERNETES, AWS S3**

Pisa, Italy

January, 2021 - December, 2021

- Redesigned a crawler that manages the analysis of more than 100k websites each run, achieving a performance improvement and developed with a focus on readability and maintainability of the code.
- Developed and maintained reactive code in Eclipse Vert.x, capable of scaling up to hundreds of thousands of requests per second.

Reply

SOFTWARE ENGINEER | **JAVA, SPRING**

Florence, Italy

May, 2020 - December, 2020

- Contributed to the development and testing of a Change Data Capture (CDC) service for the migration from legacy db to the cloud, reaching a real-time alignment between them.
- Coached the customer to adopt microservice architecture for their future products, writing a document describing the patterns and best practices to build microservice-based applications.
- Optimized the code of an application by parallelization, increasing the performance by 30%.

Education

Master's degree in Computer Science

CURRENT GPA : 4.0

University of Pisa

September, 2022 - February, 2025

- Main courses: Compilers, Algorithm design, Information retrieval, High-Performance Computing, Models of computation, System and network hacking, Cloud Computing, Advanced Network Architectures and Wireless Systems, Parallel and Distributed systems

Bachelor's degree in Computer Science

FINAL GPA: 4.0

University of Pisa

September, 2016 - July, 2020

- Main courses: Operating Systems, Computer networking, Theory of computation, Formal languages, Algorithms and data structures

Publications

SOLDANI, J., **MUNTONI, G.**, NERI, D., BROGI, A., "THE MICROTOSCA TOOLCHAIN: MINING, ANALYZING, AND REFACTORING

April, 2021

MICROSERVICE-BASED ARCHITECTURES" SOFTWARE: PRACTICE AND EXPERIENCE 51. 7 (2021): 1591

- Automatic generation of the architecture of microservice-based applications, then automatic detection and resolution of architectural smells.
- Conceptualized and prototyped the automatic generation of the architecture, with 100% of accuracy.

MUNTONI, G., SOLDANI, J., BROGI, A. (2021). "MINING THE ARCHITECTURE OF MICROSERVICE-BASED APPLICATIONS

FROM THEIR KUBERNETES DEPLOYMENT" IN: ZIRPINS, C., ET AL. ADVANCES IN SERVICE-ORIENTED AND CLOUD COMPUTING.

March, 2021

ESOCC 2020. COMMUNICATIONS IN COMPUTER AND INFORMATION SCIENCE, VOL 1360.

- Managed a successful presentation at the conference ESOCC, 2020 edition

Projects

MICROC: **COMPILER OF A C-LIKE LANGUAGE WRITTEN IN OCAML**

September, 2022 - January, 2023

- Successfully built the lexer with Ocamllex and the Ir(1) parser with Menhir. Implemented a type checker and a simple dead-code analysis. Finally, implemented the code generation to LLVM IR

- Engineered a prototype, written in Python, able to automatically build the graph representing a microservice-based application, distinguishing from other similar products by being able to discern business domain services from databases, message routers and message brokers.
- Fulfilled the 100% of accuracy for the tested applications.