Alessandro **Pomponio**

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Education

Alma Mater Studiorum (University of Bologna)

Bologna, Italia

Master's degree in computer engineering

Current

Alma Mater Studiorum (University of Bologna)

Bologna, Italia

Bachelor's degree in computer engineering

Feb. 2019

- Thesis *"Publish/subscribe monitoring of an airfield control system"*
  In collaboration with OCEM Airfield Technology in Valsamoggia

Skills

Programming languages C#, Go, Java, C, SQL, Javascript, Bash, LaTeX.

Languages Italian (mother tongue), English (level C1), Spanish (basic knowledge).

Experience

OCEM Airfield Technology

Valsamoggia, Italia

Internship

Nov. 2018 - Feb. 2019

- Development of a middleware for publish/subscribe communication to be integrated in pre-existing airport control systems.
- Development of a logging system for insulation resistance measurements.
- Development of a REST API to allow access to the logging database using web technologies.
- Development of a web client to access logs via browser.

Projects

Project work on Infrastructures for Cloud Computing and Big Data

University of Bologna

University project

- Explored the FaaS landscape running tests meant to evaluate its maturity.
- Gained hands on experience with tools like Docker, Kubernetes and Helm.
- Benchmarked the main open source FaaS frameworks: Knative, Apache OpenWhisk, OpenFaaS, Fission.
- Ran tests across different container engines to evaluate their impact on the performances.

Admin-bot

Lead developer

- Bot for the automatic moderation of Telegram groups, currently in use in a group with 3100 members.
- Anti spam and anti flooding functionalities.
- Feature-based checks on media, with automated removal of blacklisted content.
- Automated NSFW content recognition using Tensorflow models.
- Automated recognition of "bot" users using Markov chains.

Amazon-bot

Personal project

- Bot to create referral links for the Amazon affiliate program.
- Serverless execution on the AWS Lambda platform.

Puma Downloader

Lead developer

- Download manager and accelerator.
- Automatically suggest downloading links in the clipboard for ease of use.
- Automatically group downloads in categories based on extensions and download source.
- HTTP(s) and FTP support, extensible by dynamically loading DDL files.
- Project for the Software Engineering class, scoring 30 and honors.

Android App Tool

Personal project

- Tool to simplify the use of Android debug tools.
- Allows the user to effortlessly install, uninstall, backup and restore applications and their data.
- Support for boot images, recovery and zip flashing via Fastboot.

Autoposting-bot

Lead developer

- Bot to schedule posts on Telegram channels. Currently in use in a channel with over 24 thousand subscribers.
- Feature-based duplicate checks using histogram and fingerprinting functions.

Memes-API

Developer

- APIs to serve random memes. Used in a Telegram bot and in a web application.
- Over 1 million requests a year.

Honors

1st place - CRIF Open Banking Innovation Hackathon

Bologna, Italia

Team CIRAM

November 22-23, 2019

- Created “Perfect Split”, a service dedicated to expense splitting among housemates and friends.
- Use of Open Banking APIs to automatically manage transactions between members.
- Developed the backend part in Go, leveraging AWS services like API Gateway, Lambda and DynamoDB to grant scalability.
- Awarded a 5000 Euro prize.

2nd place - Fundamentals of Artificial Intelligence students’ challenge

Bologna, Italia

Team B2P

April-May, 2020

- Created “Penicilin”, a Java-based intelligent agent designed to play Tablut with Ashton’s rules.
- Use of bitwise operations to have a small memory footprint and better performance.
- Use of multithreading techniques to reach up to 5 million nodes explored per second.
- Became the ”Reaper” record holder, for the highest average captures: 6.31 (the previous record was 5.75).

Publications

The Advent of the Internet of Things in Airfield Lightning Systems: Paving the Way from a Legacy Environment to an Open World

MDPI

Co-author

Ott. 2019

- This paper discusses the design and prototype implementation of a software solution facilitating the interaction of third-party developers with a legacy monitoring and control system in the airfield environment. By following the Internet of Things (IoT) approach and adopting open standards and paradigms such as REpresentational State Transfer (REST) and Advanced Message Queuing Protocol (AMQP) for message dispatching, the work aims at paving the way towards a more open world in the airfield industrial sector. The paper also presents performance results achieved by extending legacy components to support IoT standards. Quantitative results not only demonstrate the feasibility of the proposed solution, but also its suitability in terms of prompt message dispatching and increased fault tolerance.
- Available at https://www.mdpi.com/1424-8220/19/21/4724

Additional experiences

- Took part in various challenges, including Google HashCode and Reply Code Challenge, with placements in the top 17%.
- Took part in national and international cybersecurity conferences, including HackInBo and Cybertech Europe.