



# Alessio Falai

APPLIED SCIENTIST · RESEARCH ENGINEER

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## Experience 🧰

### Amazon

Cambridge/London, United Kingdom

APPLIED SCIENTIST · FULL-TIME

November 2021 - Present



- Worked on end-to-end research to production of multi-speaker multilingual text-to-speech cloud and edge models
- [2021-22] Released Alexa male voices in more than 10 locales (see [this article](#) as an example for it-IT)
- [2022-23] Contributed to the research of high-performance on-device models operating in a cross-lingual fashion and developed more than 60 voice models that are currently deployed in BMW and Mini cars (see [this article](#) and [this video](#))
- [2023-24] Led a team of 3 scientists for delivering an LLM-based speech generation solution tailored for the ads use case
- [2024-25] Trained multi-modal LLMs for the release of Alexa+ (see [this article](#)) and Amazon Nova Sonic (see [this article](#))
- Published 3 peer-reviewed papers (2 as second author and 1 as first author)

Python PyTorch AWS TensorFlow MXNet

### Amazon

Full Remote

APPLIED SCIENTIST · INTERNSHIP

February - August 2021



- Trained forecasting ensemble models (random forest and boosted trees) on HR metrics like attendance and absenteeism
- Implemented predictive models to inform warehouse capacity planning based on regional COVID-19 outbursts

Python SKLearn AWS

### Quid Informatica

Florence, Italy

SOFTWARE DEVELOPER · FREELANCE/PART-TIME

February - September 2020



- Developed 3 production-grade Python micro-services working in banking environments, to classify and extract text from identity documents (see [the product](#))
- Implemented NER (Named Entity Recognition) techniques to parse raw OCR results
- Trained a text classification model to categorize financial documents

Python OpenCV Flask Tornado Gunicorn spaCy fastText GCP Azure

### QI-Lab

Florence, Italy

SOFTWARE DEVELOPER · INTERNSHIP/FREELANCE

March - October 2019



- Developed a library for OCR applications on identity documents
- Implemented edge/text detection techniques and custom image binarization algorithms as pre-processing steps to improve OCR results (read the [blog post](#))

Python OpenCV Django Tesseract Docker

### Continental

Pisa, Italy

SOFTWARE DEVELOPER · FREELANCE

January - September 2019



- Developed a production-grade modular GUI working in industrial settings
- The solution is currently deployed and used by human operators to log visual inspection results of mechanical pieces produced by a factory automation machine

Python Qt

### EasyClaims

Full Remote

BACKEND DEVELOPER · FREELANCE

January - March 2018



- Implemented backend features for an insurance claims video verification interface

PHP MySQL

### Develer

Florence, Italy

SOFTWARE DEVELOPER · INTERNSHIP

June 2015



- Designed and developed a library and GUI to read, generate and print barcodes during my 4th year in high school

Python Qt



## Alma Mater Studiorum - University of Bologna

M.S. IN ARTIFICIAL INTELLIGENCE · COMPUTER ENGINEERING

Grade 110 / 110 with honours

Thesis Conditioning text-to-speech synthesis on dialect accent: a case study

Python PyTorch SKLearn Prolog Scala Spark MiniZinc/Z3

Bologna, Italy

October 2019 - March 2022



## Florentina Studiorum Universitas - University of Florence

B.S. IN COMPUTER SCIENCE

Grade 110 / 110 with honours

Thesis Refinement of a Python library to perform OCR on identity documents

C Java MySQL Python

Florence, Italy

October 2016 - October 2019



## I.T.S. Tullio Buzzi

HIGH-SCHOOL DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

Grade 100 / 100

Thesis Implementation of a C++ holographic experience

C C++ Java PHP MySQL Javascript HTML CSS

Prato, Italy

September 2011 - July 2016

# Skills

## TECHNICAL

### AI/Research

Strong background in speech processing and generation with a solid understanding of cutting-edge model architectures. Working knowledge of reinforcement learning and keen interest in geometric deep learning (GNNs).

### Programming

Expertise in multiple programming languages, including **Python**, **Java**, **C/C++** and **Scala**, with deep knowledge in **Python** (especially for machine learning and data science applications).

### Libraries

Proficient in leading ML frameworks like **PyTorch** and **TensorFlow**, as well as libraries for data analysis (e.g., **NumPy**, **Pandas**, **SciPy**). Familiarity with web frameworks such as **Django** and **Flask**.

### Cloud/Web

Extensive experience using cloud platforms, especially **AWS**. Strong foundation in full-stack web development, including **HTML**, **CSS**, **JavaScript**, **PHP** and **MySQL**.

## (INTER)PERSONAL

### Languages

Italian (native), English (bi-lingual)

### Capabilities

Project Planning, Project Management, Teamwork, Leadership, Organization, Initiative, Curiosity

### Hobbies

Photography, Travelling, Food Culture, Cuisine

# Challenges

2015 **Finalist**, RoboCup Junior Italia

Malpensa Fiere, Italy

2015 **Finalist**, OIS - Olimpiadi di Informatica a Squadre (6th edition)

University of Bologna, Italy

# Certifications

2021 **8.0 / 9.0**, IELTS for UKVI General Training

Rome, Italy

# Publications

ICONIP 2023

**Alessio Falai, Dariusz Piotrowski, Renard Korzeniowski et al.**, Cross-Lingual Knowledge Distillation via Flow-Based Voice Conversion for Robust Polyglot Text-to-Speech

Changsha, China

Interspeech 2022

**Ariadna Sanchez, Alessio Falai et al.**, Unify and Conquer: How Phonetic Feature Representation Affects Polyglot Text-To-Speech (TTS)

Incheon, South Korea

Interspeech 2022

**Ziyao Zhang, Alessio Falai et al.**, Mix and Match: An Empirical Study on Training Corpus Composition for Polyglot Text-To-Speech (TTS)

Incheon, South Korea