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 4 peer-reviewed papers (2 as second author and 2 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`

Education 🏛

Alma Mater Studiorum - University of Bologna
M.S. in Artificial Intelligence · Computer Engineering

Bologna, Italy
October 2019 - March 2022

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`

Florentina Studiorum Universitas - University of Florence
B.S. in Computer Science

Florence, Italy
October 2016 - October 2019

Grade 110 / 110 with honours
Thesis Refinement of a Python library to perform OCR on identity documents

`C  Java  MySQL  Python`

I.T.S. Tullio Buzzi
High-school Diploma in Information and Communications Technology

Prato, Italy
September 2011 - July 2016

Grade 100 / 100
Thesis Implementation of a C++ holographic experience

`C  C++  Java  PHP  MySQL  Javascript  HTML  CSS`

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 📖

IEEE MLSP 2025	**Alessio Falai, Ziyao Zhang, Akos Gangoly,** Unseen Speaker and Language Adaptation for Lightweight Text-to-Speech with Adapters	*Istanbul, Turkey*
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*