

# Antonio Roberto

## Applied Scientist | AI Researcher

I am pursuing a Ph.D. in Computer Engineering at the University of Salerno until December 2022. My research focus is on leveraging deep learning algorithms to enhance signal processing and dialogue management capabilities in social robotics applications.

### WORK EXPERIENCE

#### Applied Scientist Internship

Jun 2022 – Sep 2022

Amazon Alexa, Turin, IT

- Collaborate on the creation of innovative speech recognition algorithms for the Alexa platform, utilizing a massive data set to drive development and refine performance.

#### Full-stack developer

Jul 2017 – Dec 2018

Lojo s.r.l.s., Eboli, IT

- Development of the front-end and the back-end of cross-platform mobile applications for Android and iOS.

### RESEARCH EXPERIENCE

#### Visiting Researcher

Jul 2021 – Oct 2021

Ecole Nationale Supérieure d'Ingenieurs de Caen, CAEN, FR

- Collaboration with the IMAGE team of the GREYC laboratory
- Research project: "Speech analysis for Speaker Identification and Soft-Biometrics recognition based on Deep Learning methods".

#### Research grant

Dec 2018 – Nov 2019

University of Salerno, Salerno, IT

- Research grant for developing deep learning algorithms for Sound Event Detection.

#### Erasmus research experience

Sep 2018 – Dec 2018

Rijksuniversiteit Groningen, Groningen, NL

- Erasmus period in collaboration with the Intelligent Systems research group on the topic "Financial time series forecasting".

### EDUCATION

#### Ph.D. in Computer Engineering

Dec 2019 – Dec 2022

University of Salerno, Salerno, IT

- Research in machine learning algorithms for Audio and Speech Analysis, Conversational AI, Deep Learning models optimization for Embedded Systems; publishing 6 scientific articles in international journals and conferences.

### CONTACT

- Salerno, IT (Open to Remote)
- +39 3206772900
- [roberto.antonio@outlook.it](mailto:roberto.antonio@outlook.it)
- [linkedin.com/in/robertanto](https://www.linkedin.com/in/robertanto)
- [github.com/robertanto](https://github.com/robertanto)

### SKILLS

#### Soft skills:

- Teamwork and Leadership
- Earn trust
- Curiosity
- Quick Learning
- Innovation maker

#### Techniques:

- Artificial Intelligence
- Deep Learning
- Data Mining
- Speech Processing
- Conversational AI
- Natural Language Processing
- Software Engineering
- Bio-inspired Optimization

#### Languages, Tools and Frameworks:

- Python, Java, C, MATLAB
- SQL
- Tensorflow, Keras, PyTorch
- ONNX, Tensor RT
- PyTorch Geometric, OpenCV
- HuggingFace, Transformers
- Spacy
- Pandas, Apache Spark
- NumPy, Scikit-Learn, Scipy
- Bash
- Docker
- SageMaker

### LANGUAGES

Italian  
English

### OTHER

- Student representative
- Saxophonist in a Blues band
- Cultural Associationist

## MSc in Computer Engineering

Oct 2016 – Dec 2018

University of Salerno, Salerno, IT - Grade 110/110 cum laude

- International thesis entitled "A method for forecasting financial time series based on empirical mode decomposition and manifold learning".

## PUBLICATIONS

- Few-shot re-identification of the speaker by social robots. Autonomous Robots, Springer, 2022.
- Efficient Transformers for on-robot Natural Language Understanding. ICHR 2022. IEEE-RAS.
- DENet: a deep architecture for audio surveillance applications. Neural Computing and Applications, 1-12. 2021. Springer.
- Predicting Polypharmacy Side Effects Through a Relation-Wise Graph Attention Network. S+SSPR 2020. Springer.
- Which are the factors affecting the performance of audio surveillance systems?. ICPR 2020. IEEE.
- A deep convolutionary network for automatic detection of audio events. APPIS 2020.
- Emotion analysis from faces for social robotics. SMC 2019. IEEE.
- A Challenging Voice Dataset for Robotic Applications in Noisy Environments. CAIP 2019. Springer.

## SELECTED PROJECTS

### Social Robots prototype @ SICUREZZA 2021

2021

Milan, IT

- Design and development of a Social Robotic application for the Fiera Sicurezza exhibition using the Pepper robotic platform.
- Design and development of the Conversational AI stack (Spoken Language Understanding, Dialogue Management, SoftBiometrics Recognition, People Tracking, Object Detection) at edge on a NVIDIA Jetson Xavier NX embedded system
- Technologies and tools: ROS, Linux, CUDA, Pytorch, Tensorflow, OpenCV, ONNX and TensorRT

### Facial emotion recognition (Team of 3 people)

2018

Salerno, IT

- University Competition. Worked in a team of 4 people to develop a Convolutional Neural Network for recognizing emotion from facial images.
- Technologies and tools: Google Colab, Tensorflow, Keras, and Python.

### Autonomous driving with DuckieBot (Team of 4 people)

2018

Salerno, IT

- University Competition. Worked in a team of 4 people to develop Computer Vision pipelines on board a Raspberry Pi to drive the bot.
- Technologies and tools: OpenCV, Scikit-Learn, Python, and Linux.