

# Antonio Roberto

## Research Scientist

Research Scientist currently pursuing a PhD in Computer Engineering and making research on Deep Learning algorithms for signal processing and conversation AI applied to social robotics.

## EXPERIENCE

### Applied Scientist Internship

Jun 2022 – Sep 2022

Amazon Alexa, Turin, IT

- Applied research for the development of Speech-to-Text deep learning algorithms.
- Data-driven model design based on large-scale databases.

### Visiting Researcher

Jul 2021 – Oct 2021

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

- 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".

### 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.

## EDUCATION

### PhD in Computer Engineering

Dec 2019 – Present

University of Salerno, Salerno, IT

- Research in machine learning algorithms for Audio and Speech Analysis, Conversational AI, Deep Learning optimization for Embedded Systems; publishing 7 scientific articles on international journals and conferences.

### 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".

## CONTACT

- Salerno, IT (Open to Remote)
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- [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
- Apache Spark
- NumPy, Scikit-Learn, Scipy
- Bash
- Docker

## LANGUAGES

Italian - Native Speaker  
English - B2 CEFR

## OTHER

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

## PUBLICATIONS

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- Efficient Transformers for on-robot Natural Language Understanding. HUMANOIDS 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

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### **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.