Antonio Roberto

Applied Scientist | AI Researcher

I am pursuing a Ph.D. in Computer Engineering at the University of Salerno, which will end in December 2022. My research activities aim to design and develop deep learning algorithms for signal processing and dialogue management applied to social robotics.

WORK 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 a huge amount of text and audio data.

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 Superieure 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".

EDUCATION

Ph.D. in Computer Engineering Dec 2019 – Dec 2022 (exp.)
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 7 scientific articles in international journals and conferences.

CONTACT

- Salerno, IT (Open to Remote)
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- 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.