Ariel Gjaci

Postdoctoral Researcher in Artificial Intelligence

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Professional Links

- Linkedin Profile
- Github Projects
- Google Scholar Profile
- Personal Website

Languages

Language	Level
🇮🇹 Italian	●●●●●
🇦🇱 Albanian	●●●●◐
🇬🇧 English	●●●●○

About Me

Postdoctoral Researcher at the Italian Institute of Technology (IIT) with a PhD in AI and Robotics, an MSc in Robotics Engineering, and a BSc in Biomedical Engineering. Currently working on the Xtreme European project, developing multimodal ML models for realistic binaural audio rendering at any position in a room, to be integrated into mixed reality systems for immersive audio-visual experiences. My previous research focused on culture-aware co-speech gesture generation for social robots. Passionate about learning and applying AI to complex, socially impactful challenges across machine learning and robotics.

Professional Experience

02/2025 – now — **Postdoctoral Researcher** — Italian Institute of Technology (IIT)

- Working on audio rendering tasks in the European project XTREME.
- Writing a survey on learning-based methods for novel-view audio rendering.
- Designing a high-quality binaural audio renderer driven by acoustics and visual features.
- Contributing to the release of a production-level system.

05/2021 – 10/2021 — **Software Engineer** — Akka Technologies

- Developed backend software in Python for managing aircraft panels as part of a team project.
- Delivered and presented a working demo to stakeholders.

Study

11/2021 – now — **PhD student in AI applied to robotics** — Università degli Studi di Genova - King's College London

- Built a large-scale multimodal dataset (74+ hours, 700+ subjects) with 3D pose, audio, and text across four cultures.
- Analyzed cultural influences using machine learning models across diverse datasets.
- Learned subject-independent cultural embeddings from multimodal features via domain generalization.
- Developed algorithms based on semantic similarity scores from LLM cross-encoders to identify gestures in text, achieving >9% mAP and >10% IoU improvements over a statistical baseline.
- Designed a transformer-diffusion model for autoregressive gesture generation; integrated cultural encodings to improve cultural alignment and beat sync by 5%.

2018 – 2021 — **Master's Degree in Robotics Engineering** — Università degli Studi di Genova

- Studied subjects including computer vision, ML, control theory, embedded systems, navigation, manipulators, and ROS.
- Graduated defending the thesis: Culture-Aware Co-Speech Gestures Using Generative Adversarial Networks.

2014 – 2018 — **Bachelor Degree in Biomedical Engineering** — Università degli Studi di Genova

- Studied mathematics, physics, signal processing, electronics, programming (C/C++/Matlab), materials science, and physiology.
- Graduated defending the thesis: Characterization of the Activity Evoked by Stimuli in Hippocampal Neuronal Networks.

Technical Skills

Programming

Skill	Level
Python	●●●●◐
C++/C	●●●●◐
R	●●●○○
Matlab/Simulink	●●●●○

System Level

Skill	Level
Linux	●●●●○
ROS	●●●●○
Windows	●●●○○

Machine Learning Frameworks

Skill	Level
PyTorch	●●●●◐
Scikit-learn	●●●●◐
Tensorflow	●●●○○

Embedded and Electronics

Skill	Level
dsPICDEM 2	●●●●◐
Raspberry Pi	●●●●○
Arduino	●●●●◐

Publications

2024	**Exploring Cultural Cues in Multimodal Interactions**

Exploring Cultural Cues in Multimodal Interactions
Ariel Gjaci, Viktor Schmuck, Antonio Sgorbissa, Oya Celiktutan
The 3rd Workshop on Affective Human-Robot Interaction (AHRI) at International Conference on Affective Computing (ACII)

2024   **Labeling Sentences with Symbolic and Deictic Gestures via Semantic Similarity**
Gjaci Ariel, Recchiuto Carmine Tommaso, and Sgorbissa Antonio
33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)

2022   **Towards culture-aware co-speech gestures for social robots**
Gjaci Ariel, Recchiuto Carmine Tommaso, and Sgorbissa Antonio
International Journal of Social Robotics

2022   **Culture Awareness in Intelligent Systems**
Gjaci Ariel, Oneto Luca, Recchiuto Carmine Tommaso, and Sgorbissa Antonio
Workshop on Artificial Intelligence and Robotics – AIRO 2022

2021   **A GAN-based Approach for Generating Culture-Aware Co-Speech Gestures**
Gjaci Ariel, Recchiuto Carmine Tommaso, and Sgorbissa Antonio
Workshop on Artificial Intelligence and Robotics – AIRO 2021

Teaching Activity

09/2022-   **Foundations of Informatics**   Università degli Studi di Genova
09/2024   Provided hands-on assistance and tutoring on C++ basics (60 hours).

03/2024-   **Mobile programming**   Università degli Studi di Genova
09/2024   Provided hands-on assistance and tutoring in Android development using Kotlin (30 hours).

Certifications

2023 1st **Doctoral Summer School on Robotics and Intelligent Machines**
Scuola Superiore Sant'Anna

- Learned and revised different robotics-related topics, i.e., ROS programming, sensor data acquisition with LabView, CAD design with PTC Creo, and Computer Vision algorithms.
- Worked on a team project involving the control of a 6-DOF manipulator to move a dice in the right position.

2023   **Topics in Modern Machine Learning (ModML)**
MaLGa

- Attended lectures on modern Machine Learning topics: Statistical Learning, Optimization, Sketching, Implicit Regularization, Reinforcement Learning, Machine Learning for Inverse Problems, Optimal Transport, Fairness, Learning in interpolation regimes, and Sampling as first-order optimization.
- Completed the exam involving the completion of 3 Colab Notebooks on 3 different topics.

2022   **Natural Language Processing with Classification and Vector Spaces**
Coursera
- Learned basic concepts of Natural Language Processing.

2021   **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**
Coursera
- Learned basic optimization concepts of Neural Networks.