

## Education

- **Ph.D. in Information Engineering and Computer Science** [University of Trento, Italy](#) | **2021 - Ongoing**  
*Research Topic:* Knowledge representations with graphs for narratives to be integrated into Large Language Models  
*Supervisor:* Professor [Giuseppe Riccardi](#)  
*Expected graduation (MM/YY):* 07/2025
- **M.Sc. in Computer Science** [University of Trento, Italy](#) | **2017 – 2020**  
*Topics of Study:* Natural Language Processing, Optimization, Distributed Systems, Deep Learning and Machine Learning  
*Thesis Title:* [Multifunctional ISO standard Dialogue tagging in Italian](#)
- **B.Sc. in Computer Science** [University of Trento](#) | **2013 - 2017**  
*Topics of Study:* Mathematics, Statistics & Probability, Algorithms, Data Structures

## Publications

[EMNLP2024] [Will LLMs Replace the Encoder-Only Models in Temporal Relation Classification?](#)

Roccabruna, G., Rizzoli, M., & Riccardi, G. (2024). Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing.

[INLG2024] [Should We Fine-Tune or RAG? Evaluating Different Techniques to Adapt LLMs for Dialogue.](#)

Alghisi, S., Rizzoli, M., Roccabruna, G., Mousavi, S. M., & Riccardi, G. (2024). Proceedings of the 17th International Natural Language Generation Conference.

[ACL 2023] [Understanding Emotion Valence is a Joint Deep Learning Task](#)

Roccabruna, G., Mousavi, S. M., & Riccardi, G. (2023, July). Proceedings of the 13th Workshop on Computational Approaches to Subjectivity, Sentiment, & Social Media Analysis, 85–95.

[ACL 2023] [Whats New? Identifying the Unfolding of New Events in Narratives](#)

Mousavi, S. M., Tanaka, S., Roccabruna, G., Yoshino, K., Nakamura, S., & Riccardi, G. (2023, July). Proceedings of the The 5th Workshop on Narrative Understanding, 1–10.

[INTERSPEECH 2023] [Let's Give a Voice to Conversational Agents in Virtual Reality](#)

Yin, M., Roccabruna, G., Azad, A., & Riccardi, G. (2023). Proc. INTERSPEECH 2023, 5247–5248.

[ACL 2022] [Can Emotion Carriers Explain Automatic Sentiment Prediction? A Study on Personal Narratives](#)

Mousavi, S. M., Roccabruna, G., Tammewar, A., Azzolin, S., & Riccardi, G. (2022, May). In Proceedings of the 12th Workshop on Computational Approaches to Subjectivity, Sentiment & Social Media Analysis (pp. 62-70).

[LREC 2022] [Multi-source Multi-domain Sentiment Analysis with BERT-based Models](#)

Roccabruna, G., Azzolin, S., & Riccardi, G. (2022, June). In Proceedings of the Thirteenth Language Resources and Evaluation Conference (pp. 581-589).

[LREC 2022] [Annotation of Valence Unfolding in Spoken Personal Narratives](#)

Tammewar, A. U., Franziska, B., Roccabruna, G., Sebastian, B., Korbinian, R., & Riccardi, G. (2022). In Proceedings of the Thirteenth Language Resources and Evaluation Conference (pp. 7004-7013). ELRA

[INTERSPEECH 2022] [What can Speech and Language Tell us About the Working Alliance in Psychotherapy](#)

Bayerl, S. P., Roccabruna, G., Chowdhury, S. A., Ciulli, T., Danieli, M., Riedhammer, K., & Riccardi, G. (2022). Proc. Interspeech 2022, 2443–2447.

[EMNLP 2022] [Evaluation of Response Generation Models: Shouldn't It Be Shareable and Replicable?](#)

Mousavi, S. M., Roccabruna, G., Lorandi, M., Caldarella, S., & Riccardi, G. (2022, December). In Proceedings of the 2nd Workshop on Natural Language Generation, Evaluation, and Metrics (GEM) (pp. 136-147)

[CLiC-it 2020] [Multifunctional ISO standard Dialogue Act tagging in Italian](#)

Roccabruna, G., Cervone, A., & Riccardi, G. (2020). Computational Linguistics CLiC-it 2020, 365.

## Development Skills

*Technical Skills:* Sklearn, PyTorch, TensorFlow, Keras, spaCy and NLTK, LLMs;

*Languages:* Fluent in English and Italian

# Experience

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**Internship** [Amazon.com Services LLC, U.S.A.](#) | 06/2024 – 09/2024

- Topic: Geo-localization of textual content (a.k.a. geoparsing or toponym linking)

**Teaching Assistant** [University of Trento, Italy](#) | 2021 - Ongoing

- Natural Language Understanding A.Y. 2021-2022, 2022-2023, 2023-2024
- Human-Machine Dialogue A.Y. 2023-2024, 2024-2025

**Research Assistant** [University of Trento, Italy](#) | 2020 - 2021

- R&D of the Natural Language Understanding component of a personal healthcare agent during the European Research project Coadapt
- R&D of neural language models (PennTreeBank corpus) and intent classification and slot filling models (ATIS and SNIPS).

**Internship** [Fondazione Bruno Kessler \(FBK\), Italy](#) | 2016 - 2017

- Automatic computation of nutrient values and carbon footprint of any dish given the recipe. The goal was to raise awareness in people to reduce food waste.

# Projects

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**Knowledge representation of personal narratives with graphs**

[Personal Research](#) | [Current](#)

Currently, I am working on the representation of knowledge in personal narratives with a graph of events and states. A Personal narrative is a personal recount rich in events and sub-events and contains complex networks of participants. Since the goal of my reach is a conversational agent that can engage with a user to discuss personal events to collect further details, this representation will be used as external knowledge to be embedded into Large Language Models. Thus, I will study how the representation of external knowledge can mitigate the hallucination issue, which is the most hindering problem for the application of LLMs in this conversational agent.

**I-Narrative: A study on relations language-emotions elicited from personal recounts**

[“iNEST: an Ecosystem for Innovation” founded by Next Generation EU](#) | [Current](#)

Currently, our group is working on the [“iNEST”](#) project. The project aims to investigate the relations between language expression of elicited recounts of personal experiences and emotions felt during the recount. Furthermore, we will study the presence of this link in multi-modal sources i.e. video, audio and biomarkers (electro-derma activity).

**My contribution:** Collaborating with other team members, I designed the experiment and wrote the document for the Internal Review Board to obtain ethical approval.

**BLU: Personal Healthcare Agent for the autism spectrum disorder**

[“AI Coach” Project founded by TIM in collaboration with ANFFAS ITALIA](#) | 2020 – 2023

Our group worked on the [“AI Coach”](#) project with the goal of developing a Personal Healthcare Agent (PHA) agent to help people with autistic disorders deal with distress caused by everyday events. In this project, the challenge was to develop the PHA with continuously updated knowledge adapted to the specific user’s needs.

**My contribution:** The design and development of all components of the PHA, in collaboration with other team members, psychologists and caregivers.

**Personal Healthcare Agent for the Mental Well-Being of Aging Citizens**

[“CO-ADAPT” Project founded by EU Horizon 2020 program](#) | 2020 – 2021

As a partner in the [CO-ADAPT](#) project, our group developed a Personal Healthcare Agent (PHA) in the mental health domain. The PHA is capable of engaging users in conversations to collect information about the personal events experienced by the user. These dialogues can span over single as well as multiple interactions.

**My contribution:** The design and development of the Natural Language Understanding component of the PHA, in collaboration with other team members, psychologists and researchers from other universities.