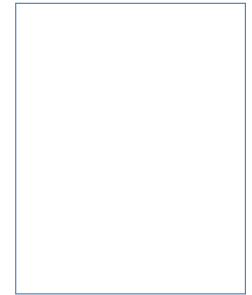


Sandro Gabriele Tiddia



Curriculum Vitae

About Me

I am a dedicated third-year Ph.D. student in Computer Science, researching at the intersection of Natural Language Understanding and Knowledge Graphs. I am passionate about applying semantic technologies to real-world problems and collaborating across academia and industry on knowledge-driven AI systems. The rapid advances in Artificial Intelligence over the past few years have led me to explore the power of Large Language Models as key tools to complement and integrate with more traditional approaches in my research.

Education

- 2022 – ongoing **Ph.D. Mathematics and Computer Science**, *University of Cagliari*.
Focus - Automating the construction, validation, and querying of KGs using LLMs.
- 2020 – 2022 **M.Sc. Computer Science**, *110/110 cum laude, University of Cagliari*.
Graduation date - 10/2022
Thesis - *Toward CodeOntology 2.0: a framework to support expressive queries over source code*
Thesis Advisor - *Maurizio Atzori*
- 2018 – 2020 **B.Sc. Computer Science**, *110/110 cum laude, University of Cagliari*.
Graduation date - 09/2020
Thesis - *Structuring implicit information from free text with OKgraph: unsupervised algorithms for NLU*
Thesis Advisor - *Maurizio Atzori*
- 2013 – 2017 **B.Sc. Civil Engineering**, *110/110 cum laude, University of Cagliari*.
Graduation date - 02/2017

Relevant Skills

- Large Language Models** Proficient in applying LLMs to real-world tasks such as information extraction, classification, translation, and intent resolution. Experience with both prompt engineering and fine-tuning techniques. Familiar with LLM agent pipelines and output control via structured prompting and guidance techniques. Practical experience with efficient local deployment using tools such as *ollama* and *vLLM*.
- Natural Language Processing** Practical experience with core NLP tasks including lemmatization, POS tagging, chunking, and vector similarity. Skilled in using libraries such as *spaCy*, *NLTK*, and embedding models for semantic representation.
- Semantic Search** Experience with dense vector representations and efficient semantic retrieval using indexing libraries such as *FAISS*, applied in Question Answering and RAG pipelines.
- Semantic Web Technologies** Competent with RDF, OWL, SPARQL and Cypher query languages. Developed ontologies using *Protégé* and managed them programmatically with *rdflib* and *owlready2*. Applied structured knowledge in KGQA and entity-centric retrieval systems.
- Programming Languages** *Python* (primary).
Also experienced with *C*, *C++*, *Java*, and *MATLAB*.

Languages	<i>Italian</i> – native. <i>English</i> – professional working proficiency.
Teamwork and Communication	Worked closely with cross-functional teams across academia and startups. Contributed to multidisciplinary research and collaborated effectively with non-technical stakeholders.

Related Research Papers

Journals

- 2025 **Are LLMs adequate SPARQL query generators? Investigating Zero-Shot NL-to-SPARQL translation.**
Authors - A. Giuliani, M. M. Manca, L. Piano, A. S. Podda, L. Pompianu, S. G. Tiddia
Journal - *Neural Computing and Applications*
- 2025 **LLIMONIIE: Large Language Instructed Model for Open Named Italian Information Extraction.**
Authors - S. Carta, A. Giuliani, L. Piano, A. Pisu, L. Pompianu, S. G. Tiddia
Journal - *Journal of Intelligent Information Systems*

Conferences

- 2025 **Explainable Knowledge Access: Recursive and Rerank-Based RAG for Interpretable QA.**
Authors - M. Cosseddu, A. Giuliani, M. M. Manca, M. Pilloni, A. S. Podda, S. G. Tiddia
Venue - *EXPLAINS 2025: 2nd International Conference on Explainable AI for Neural and Symbolic Methods*
- 2024 **A Zero-Shot Strategy for Knowledge Graph Engineering Using GPT-3.5.**
Authors - S. Carta, A. Giuliani, M. M. Manca, L. Piano, A. S. Podda, L. Pompianu, S. G. Tiddia
Venue - *28th International Conference on Knowledge-Based Intelligent Information & Engineering Systems*
- 2024 **Instruct Large Language Models for Public Administration Document Information Extraction.**
Authors - S. Carta, A. Giuliani, M. M. Manca, L. Piano, A. Pisu, S. G. Tiddia
Venue - *4th CINI National Conference on Artificial Intelligence*
- 2023 **SailGenie: Sailing expertise to knowledge Graph through open Information Extraction.**
Authors - S. Carta, P. Fariello, A. Giuliani, L. Piano, A. S. Podda, S. G. Tiddia
Venue - *27th International Conference on Knowledge-Based Intelligent Information & Engineering Systems*

Preprint

- 2023 **Iterative Zero-Shot LLM Prompting for Knowledge Graph Construction.**
Authors - S. Carta, A. Giuliani, L. Piano, A. S. Podda, L. Pompianu, S. G. Tiddia

Workshops

- 2024 **Towards Zero-shot Knowledge Graph building: Automated Schema Inference.**
Authors - S. Carta, A. Giuliani, M. M. Manca, L. Piano, S. G. Tiddia
Venue - *1st International Workshop on Human-Centered Modeling and Adaptation for Digital Transformation*
- 2024 **Towards Knowledge Graph Refinement: Misdirected Triple Identification.**
Authors - S. Carta, A. Giuliani, M. M. Manca, L. Piano, L. Pompianu, S. G. Tiddia
Venue - *1st International Workshop on Human-Centered Modeling and Adaptation for Digital Transformation*
- 2023 **Empowering Digital Transformation in Tourism through Intelligent Methods for Representation and Exploitation of Cultural Heritage Knowledge.**
Authors - S. Carta, G. Fenu, A. Giuliani, M. M. Manca, M. Marras, L. Piano, A. S. Podda, L. Pompianu, S. G. Tiddia
Venue - *2nd Workshop on Artificial Intelligence for Cultural Heritage*

Teaching and Tutoring Activities

- 2024 – **Course of Reinforcement and Adversarial Learning**, *University of Cagliari*.
ongoing Assist the lead instructor in preparing course materials, supporting students during lectures, and addressing questions on Reinforcement Learning and Adversarial Training concepts.
- 2023 – 2024 **Course of Operating Systems**, *University of Cagliari*.
Conducted lectures as tutor and supported students in both theoretical and hands-on laboratory sessions on Operating Systems fundamentals. Guided students through practical assignments and coding exercises. Evaluated and graded final student projects.

In-Person Conference Presentations

- 2024 **An End-to-End OCR-Free Solution For Identity Document Information Extraction**, *28th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems*.
- 2024 **Towards Knowledge Graph Refinement: Misdirected Triple Identification**, *1st International Workshop on Human-Centered Modeling and Adaptation for Digital Transformation*.
- 2023 **SailGenie: SAILing expertise to knowledge Graph through opEN Information Extraction**, *27th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems*.

Project Contributions

- 2024 **KG-LLM-Prompting**.
Description - A Python library aiming to leverage the inherent capabilities of LLMs to analyze, elaborate, and generate human-like text to construct Knowledge Graphs from unstructured textual information.
Contribution - Development of the entire codebase.
Link: <https://github.com/SandroGT/KG-LLM-Prompting>
- 2024 **SynthIDGenerator**.
Description - A Python pipeline designed to generate synthetic images of personal identification documents (ID cards), aimed at enhancing document information extraction tasks by creating additional training data.
Contribution - Development and implementation of the pipeline.
Link: <https://github.com/SandroGT/SynthIDGenerator>
- 2022 **CodeOntologyPython**.
Description - A Python library for the automatic construction of knowledge graph representations of source code from Python projects and libraries.
Contribution - Ontology research, study and refinement; framework development.
Link: <https://github.com/SandroGT/CodeOntologyPython>
- 2020 **OKGraph**.
Description - Acronym for Open Knowledge Graphs, is a Python library for the automatic extraction of information from texts using unsupervised natural language understanding (NLU) techniques.
Contribution - Implementation of core tasks and refactoring of the existing codebase.
Link: <https://github.com/atzori/okgraph>

GDPR Compliance

I authorize the processing of my personal data in accordance with Legislative Decree 196 of 30 June 2003 and the GDPR (EU Regulation 2016/679).

Sandro Gabriele Tiddia