Emanuele La Malfa

personal page

Work Experience

Post Doctoral Researcher Jul. 2023 – Current

Benchmarking Large Language Models. *The Alan Turing Institute & University of Oxford, UK*

- Principal Investigators: Prof. Michael Wooldridge, Nigel Shadbolt, and Anthony Cohn.

Research Assistant Oct. 2019 – Mar. 2021

Enabling rapid adoption of artificial intelligence through an anonymized data protocol and explainable models. *University of Oxford, UK*

- Principal Investigator: Prof. Marta Kwiatkowska.
- Collaboration with GenieAI and funded through the InnovateUK scheme.
- The collaboration led to a paper published at EMNLP'20.

Consultant Mar. 2018 – Aug. 2019

IBM, Global Business Unit *IBM, Milan, Italy*

- Design, development, and deploy of a search engine for a public financial institution.
- Design, development, and deploy of a cloud document management system for a public financial institution.

Education

University of Oxford Oct. 2019 – Nov. 2023

PhD (DPhil) in Computer Science, supervised by Prof. Marta Kwiatkowska. *Oxford, UK*

Polytechnic University of Milan Feb. 2015 – Sept. 2017

Master's Degree in Computer Science and Engineering. *Milan, Italy*

Polytechnic University of Milan Sept. 2011 – Sept. 2014

Bachelor's Degree in Computer Engineering. *Milan, Italy*

Publications

NLP and Linguistics

Code Simulation Challenges for Large Language Models
Pre-print (long paper)
Emanuele La Malfa, Christoph Weinhuber, Orazio Torre, Fangru Lin, Anthony Cohn, Nigel Shadbolt and Michael Wooldridge

Language-Models-as-a-Service: Overview of a New Paradigm and it its Challenges
Pre-print (long paper) - media coverage here and here
Emanuele La Malfa, Aleks Petrov, Frieder Simon, Christoph Weinhuber, Raza Nazar, Anthony Cohn, Nigel Shadbolt and Michael Wooldridge

Language Models Tokenizers Introduce Unfairness Between Languages
NeurIPS'23 (long paper, main track) - website
Aleksandar Petrov, **Emanuele La Malfa**, Philip Torr, Adel Bibi

Emergent Linguistic Structures in Neural Networks are Fragile
Working paper (long paper)
Emanuele La Malfa, Matthew Wicker, Marta Kwiatkowska

***The King is Naked*: on the Notion of Robustness for Natural Language Processing**
AAAI'22 (long paper, main track) – **oral presentation** –
Emanuele La Malfa, Marta Kwiatkowska

On Guaranteed Optimal Robust Explanations for NLP Models
IJCAI'21 (long paper, main track)
Emanuele La Malfa, Rhiannon Michelmore, Agnieszka Zbrzeny, Nicola Paoletti, Marta Kwiatkowska

Assessing Robustness of Text Classification through Maximal Safe Radius Computation
EMNLP'20 (long paper)
Emanuele La Malfa, Min Wu, Luca Laurenti, Benjie Wang, Anthony Hartshorn, Marta Kwiatkowska

Complex Networks Theory and Deep Learning

Deep Neural Networks as Complex Networks
Pre-print (long paper)
Emanuele La Malfa, Gabriele La Malfa, Claudio Caprioli, Giuseppe Nicosia, Vito Latora

Characterizing Learning Dynamics of Deep Neural Networks via Complex Networks
IEEE-ICTAI'21 (long paper, main track)
Emanuele La Malfa, Gabriele La Malfa, Giuseppe Nicosia, Vito Latora

Teaching Experience

Deep Learning in Healthcare 2024 (HT)
Practical sessions *University of Oxford, UK*
Machine Learning 2023 (MT)
Classes *University of Oxford, UK*
Probabilistic Model Checking 2023 (MT)
Practical sessions *University of Oxford, UK*
Ethical Computing in Practice 2023 (HT)
Practical sessions *University of Oxford, UK*
Deep Learning in Healthcare 2023 (HT)
Practical sessions *University of Oxford, UK*
Probabilistic Model Checking 2022 (MT)
Practical sessions *University of Oxford, UK*
Machine Learning 2021 (MT)
Classes *University of Oxford, UK*
Probabilistic Model Checking 2021 (MT)
Practical sessions *University of Oxford, UK*
Fundamentals of Computer Science 2016 (Oct.-Dec.)
Practical sessions *Polytechnic University of Milan, Italy*

Conferences and Workshops Organization

Benchmarking Large Language Models 28/11/2023
Workshop Organizer *The Alan Turing Institute, London, UK*
LOD2020, **LOD2021**, **LOD2022**, **LOD2023**
Conference Chair *Lake District/Siena*

Invited Lectures, Talks, and Presentations

On Robustness for Natural Language Processing 19/04/2023
Group Talk *ICREA, Barcelona*
On the Notion of Robustness for Natural Language Processing 17/01/2023
Departmental Talk *King's College University of London, UK*
Robustness for Natural Language Processing 22/04/2022
Lecture – Deep Fridays *University of Bologna, Italy*
Explainable AI 04/03/2022
Lecture – Advanced Artificial Intelligence Course *Royal Holloway University of London, UK*

Tutoring and Mentoring

Williams-Exeter Exchange Programme 2023-2024
Tutoring Saad Waheed and Alisa Kanganis, (Williams-Exeter Programme exchange students in machine learning).
University of Oxford 2022
Tutoring Edward Kusel and Aleksandar Radoslavov for their part-B projects (undergraduate in Computer Science).
Lead the Future - Mentor 2022-current
Lead the Future is a nonprofit organization that helps Italian talents in STEM disciplines to find their path to brilliant careers.

Academic Revieweing and Volunteering

The Alan Turing Institute - Reviewer October - December 2023
Reviewers for the Turing Fellow Program - Panel "Fundamental Research in Data Science and AI"
Ukrainian Global University - Interviewer April-June 2023
I interviewed Ukrainian students who want to study in a partner university abroad.
The Kharkiv and Przemyśl Project August 2022
I spent a week in Przemyśl (Poland) as a volunteer to help refugees who arrived (returned) from (to) Ukraine.
Ukrainian Global University - Interviewer June-May 2022
I interviewed a dozen of prospective undergraduate Ukrainian students who want to study in a partner university abroad.
Eutanasia Legale - Volunteer July 2021
I have collected signatures for a referendum to decriminalize euthanasia. The overall campaign gathered 1.2 million valid signatures.