Berducci Luigi

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I am an enthusiastic Computer Scientist and I love to approach new challenges, formalise them and have a clear logical understanding of the problems. I am a PhD candidate and look forward to participating in international conferences and experiences to exchange ideas and collaborate with brilliant minds.

Education

2020 – Present » **Ph.D. Candidate, Institute of Computer Engineering, TU Wien**
Research Topic: Safe Learning Algorithms for Autonomous Driving
Advisor: Radu Grosu

2018 – 2020 » **MSc in Computer Science, University of Rome "La Sapienza"**
Main interests: Formal methods on Cyber-Physical Systems, Optimization problems and algorithms
Thesis: Failure Probability Estimation for Autonomous Systems through Deep Reinforcement Learning and Importance Splitting
Supervisors: Enrico Tronci, Radu Grosu
Final mark: 110/110 e lode (*full marks with honors*).

2015 – 2017 » **BSc in Computer Science, University of Rome "La Sapienza"**
Main interests: Algorithms and Programming languages, Parallel computing
Thesis: Performance analysis of Apache Spark in Scala, Java and Python.
Supervisor: Irene Finocchi
Final mark: 110/110 e lode (*full marks with honors*).

Employment History

Jan 2021 – Present » **Collaborator, Autonomous Driving EXaminer (ADEX).** The research project aims to develop an automatic testing methodology for Autonomous Driving (ADAS) Systems leveraging learning algorithms. Starting from a collection of most-critical scenarios for human drivers, ADEX generates new challenging scenarios for the ADAS System under test. The project mixes expertise from Accident Analysis and Runtime Verification (RV), with novel Reinforcement Learning (RL) and Procedural Content Generation techniques. I contribute with my expertise in RL, and familiarity with simulation environments (e.g., CARLA) and RV tools (e.g., STL Monitoring).

Jan 2020 – Sep 2020 » **GARR Scholarship 2020 at INFN RomaTre.** Scholarship for proposing the project "ML4NP: A Machine Learning Approach for Neutrino Physics" in the context of the LEGEND-200 experiment. The research project aims to develop a classifier for real-time rejection of noisy sensor data, in order to allow the experiment to be extended in size in the current facilities without suffering an overwhelming level of ambient background noise.

Competitions

Sep 2021 » **9th F1TENTH Autonomous Grand Prix at IROS2021** Team-based competition to deploy autonomous racing algorithms on F1Tenth miniature racecars. The team ”Scuderia Segfault” won the first prize as fastest car in the Time Trials, and head-to-head competition.

2018 – 2020 » **Online Competitions** During the university, I participate in various team-based online competitions, ranging from Machine Learning (e.g., Kaggle - House Prices, Kaggle - APTOS 2019 Blindness Detection) to competitive programming (ITACPC - Italian Collegiate Programming Contest).

Personal projects

Oct 2021 – Present » **Autonomous F1Tenth Racing Team.** After having participated to F1Tenth Autonomous Racing Competition, I support and actively take part in the formation of a F1Tenth team at TU Wien. The aim of the F1Tenth Team is to develop novel racing algorithms, experimenting techniques for perception, planning, and control of autonomous racing cars.

Other skills

Coding » **Python**, CPP, ROS, Bash scripting

Databases » MySQL, PostgreSQL

Operating Systems » **Linux Ubuntu**, Windows 10

Languages » Native **Italian**.
English: IELTS certification on March 2019. Score: 7.0 (CEFR Level: **C1**). Master’s study and experience in foreign countries have enforced my communication skills in English.
German: Currently studying German (Level: A2/B1) and living in a German-speaking country.