Ricardo Dominguez-Olmedo

Website: ricardodominguez.github.io
Email: ricardo.olmedo@tuebingen.mpg.de

Education

MSc Machine Learning *Oct. 2019 - Present*

Department of Computer Science, University of Tübingen, Germany

- **Grade average**: 1.00/1.00 (GPA 4.0)
- **Thesis**: On the Adversarial Robustness of Causal Algorithmic Recourse
- **Supervisors**: Bernhard Schölkopf, Amir-Hossein Karimi

BEng Mechatronic and Robotic Engineering *Sept. 2016 - Jul. 2019*

Department of Automatic Control and Systems Engineering, The University of Sheffield, UK

- **Classification**: First Class Honours (GPA 4.0), Top of Class
- **Thesis**: Sample-Efficient Deep Reinforcement Learning for Control in Additive Manufacturing
- **Supervisor**: George Panoutsos

Work Experience

Max Planck Institute for Intelligent Systems *June 2021 - Present*

Research Intern, supervised by Prof. Bernhard Schölkopf, Empirical Inference Department

- Master thesis *On the Adversarial Robustness of Causal Algorithmic Recourse* (arxiv.org/abs/2112.11313)
- Additionally researching applications of Riemannian geometry for structural causal models (SCMs) in order to define notions of i) counterfactual similarity between individuals for a given SCM ii) similarity between SCMs.

Karlsruhe Institute of Technology *Nov. 2020 - May 2021*

Research Assistant for Prof. Gerhard Neumann, Autonomous Learning Robots Lab

- Independent research project *A Temporally Coherent Policy for Reinforcement Learning*. Proposed a recurrent policy that ensures high temporal coherence of the agent's actions, resulting in more effective exploration.
- Continuation of my work at the Bosch Center for Artificial Intelligence on end-to-end robotic grasping.

Bosch Center for Artificial Intelligence *Mar. 2020 - Sept. 2020*

Research Intern with Prof. Gerhard Neumann, Tübingen Research Unit

- Implemented a variety of deep-learning-based robotic grasping methods. Curated large-scale object datasets and designed an experimental protocol to compare the performance of the different methods in realistic settings.
- Wrote scalable benchmark scripts for tractable run times in a high-performance computing cluster. Analyzed and periodically presented results verbally and in writing to an audience of research scientists.

The University of Sheffield *Jan. 2019 - Jul. 2019*

Research Intern, Advanced Manufacturing Research Center

- Bachelor's thesis on end-to-end control of a complex thermomechanical manufacturing process.
- Modeled the process dynamics with an ensemble of probabilistic neural networks and leveraged model predictive control to achieve state-of-the-art control performance.

Dyson Technology Ltd. *June 2018 - Sept. 2018*

Software Intern, Robotics Research, Design and Development Team, UK

- Applied stochastic search to efficiently train vehicle control policies for Dyson's autonomous robotic vacuum.
- Devised and implemented software changes to reduce the reaction time of the robot by an order of magnitude.

The University of Sheffield *Jan. 2018 - June 2018*

Research Assistant for Prof. Mahnaz Arvaneh, Physiological Signals and Systems Laboratory

- Research on inferring cognitive workload from EEG brain signals for patients with lower-limb exoskeletons.

The University of Sheffield *Jan. 2017 - June 2017*

Research Assistant for Dr. Chelsea Sabo, Sheffield Robotics, Department of Computer Science

- Research on real-time classification of EMG muscle signals for robotic control.

Publications

On the Adversarial Robustness of Causal Algorithmic Recourse *2021*

NeurIPS 2021 WHY-21 Workshop Causal Inference and Machine Learning: Why now? *(Contributed Talk)*

Other Activities

Sheffield Eco Motorsports *Oct. 2016 - Jul. 2019*

Team Leader, Sheffield, UK

- Lead a team of 24 undergraduates building a hyper-efficient electric go-kart. Responsible for overall organization and strategy, project planning, recruiting, liaising with academic staff and management of a budget of £20,000.
- Successfully competed in the 2019 Shell Eco Marathon, an international competition on vehicle energy-efficiency.

Awards

- Mappin Medal, Graduated with Greatest Distinction, ACSE Department, The University of Sheffield (2019)
- Nicholson Award for Best Academic Performance in Year 3, ACSE Department, The University of Sheffield (2019)
- Ravenscroft Prize for Outstanding Academic Performance, Faculty of Engineering, The University of Sheffield (2018)
- Laplace Award for Best Academic Performance in Year 1, ACSE Department, The University of Sheffield (2017)
- Undergraduate Scholarship for Academic Achievement, Faculty of Engineering, The University of Sheffield (2016)
- Spanish Baccalaureate Scholarship for Academic Excellence, Ministry of Education of Spain (2016)