Oriol Corcoll Andreu

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Research

I firmly believe that there is a significant leap towards understanding intelligence at the intersection of reinforcement learning and causality. My research focuses on enabling RL agents to learn without rewards by learning and exploiting the causal structures of the world.

- Explanatory World Models via Look Ahead Attention for Credit Assignment.
  O. Corcoll, R. Vicente. ongoing 2021.
- Modeling the Autonomy of Reinforcement Learning Agents.
  A. Ingel, **O. Corcoll**, A. Makkeh, R. Vicente. Forthcoming 2021.
- Did I do that? Blame as a means to Identify Controlled Effects in Reinforcement Learning.
  O. Corcoll, R. Vicente. ICML 2021 Unsupervised RL.
- Disentangling Causal Effects for Hierarchical Reinforcement Learning.
  O. Corcoll, R. Vicente. Under review 2020.
- Attention Manipulation in Reinforcement Learning Agents.
  O. Corcoll, A. Makkeh, J. Aru, O. Theis, R. Vicente. CCN 2019.

Work Experience

Junior research fellow - University of Tartu - Tartu Estonia (2020-present)
As a research fellow, I study how explanations can be used to discover causal relations. Additionally, I support teaching neural networks and a seminar on computational neuroscience.

Software developer engineer - Amazon Alexa - London UK (2016-2018)
As part of Alexa's multimedia team, I developed a scalable automated ingestion system of multimedia content to show high-quality images and videos on Alexa's Echo Show and Echo Spot devices. In particular, I built a deep learning-based semantic image cropping system. Additionally, I used deep learning to estimate how aesthetically pleasing an image is.

Software developer engineer - Amazon Video - London UK (2015-2016)
Built a high-traffic and highly available price engine to provide discounts and offers to Amazon Video customers.

Software developer engineer - Cash On Go - Tartu Estonia (2014-2015)
Redesigned and implemented a scalable loan engine.

Assistant researcher - Aalto University - Espoo Finland (2014)
Designed and implemented a prediction engine for DNA-based tile models in the Natural Computation research lab.

Education
Ph.D. Candidate (2018-present): University of Tartu, Estonia.
Master (2016-2018): Big Data Science at Queen Mary University of London, UK.
Bachelor (2010-2014): Computer Science at Polytechnic University of Catalonia, Spain.

Tech
Data Science: Pytorch, Keras, TensorFlow, Pandas, Numpy, Jupyter, SciPy.
Languages: Python**,** Java, C#, Scala, PHP, C++, Javascript.
Engineering: Docker, AWS, Spark, Hadoop, Redshift, DynamoDB, Redis, Memcached.

Projects
Master Thesis: Semantic Image Cropping using Deep Learning.
Bachelor Thesis: Design Tools for Reinforced 3D DNA Nanostructures.
FHC: Compiler to translate a custom-made high-level programming language to FPGA compatible Verilog language.

Interests
Deep Learning, Reinforcement Learning, Causality, Neuroscience, and Compilers.

Languages
Spanish and Catalan: Native.
English: Working Proficiency.