





PERSONAL INFORMATION

Lucas F Torroba Hennigen

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EDUCATION AND TRAINING

10/2019–Present

MPhil Advanced Computer Science

EQF level 7

University of Cambridge, Cambridge (United Kingdom)

General:

- Thesis topic on "Do Word Embeddings have Morphological Neurons?", supervised by Ryan Cotterell. We are using a novel generative probe to determine whether morphological information is concentrated in a single dimension or scattered across many.

Courses:

- NLP: L95 Natural Language Syntax and Parsing, L101 Machine Learning for Language Processing, R250 Advanced Topics in Machine Learning and NLP
- Other: R260 Technology, Law and Society, P252 Machine Learning for Programming

06/08/2019–10/08/2019

CMMRS Pre-Doctoral Research Summer School

Cornell, Maryland and Max-Planck Institute, Saarbrücken (Germany)

- Exposed to topics at the forefront of research in a wide range of computer science fields
- Fully-funded summer school

09/2016–07/2019

BSc Artificial Intelligence and Computer Science (Hons); First-class

EQF level 6

The University of Edinburgh, Edinburgh (United Kingdom)

General:

- Projects in various programming languages (e.g. Python, C++, Java) and frameworks (e.g. PyTorch, AllenNLP, spaCy)
- Specialized in NLP and Machine Learning
- NLP honours project on "Historical Event Ordering with Contextual Information", supervised by Shay Cohen
- Attended meetings of an NLP research group, and on one occasion presented a recent paper

Selected Courses:

- Machine Learning: Introductory Applied Machine Learning; Machine Learning and Pattern Recognition (Masters-level); Machine Learning Practical (Masters-level)
- NLP: Foundations of Natural Language Processing; Natural Language Understanding, Generation, and Machine Translation (Masters-level)
- Other: Reinforcement Learning

2013–2014

International Baccalaureate Diploma

EQF level 4

British School of Rio de Janeiro, Rio de Janeiro (Brazil)

Higher-level subjects: Mathematics HL (7), Computer Science HL (7), Physics HL (6)

Total points: 42/45

WORK EXPERIENCE

06/2018–08/2018

Intern Software Developer

Canon Medical Systems Corporation, Edinburgh (United Kingdom)

- Created a prototype virtual reality application using Direct3D, SteamVR and company-specific APIs
- Devised novel solutions to API limitations
- Interacted with a large codebase
- Addressed significant performance and UX challenges
- Gained experience collaborating with others
- Participated in meetings and made presentations about my work

ADDITIONAL INFORMATION

Research Experience

- **Natural language understanding:** I explored the use of LSTM-based architectures to predict when historical events (expressed as short text descriptions) occurred, and whether additional contextual information could be used to improve predictions.
- **International collaboration:** I co-authored a paper based on the research I did for my undergraduate dissertation. The work for it was carried out jointly with my supervisor and two members of the Hebrew University of Jerusalem. The paper is under review for ACL 2020.
- **Natural language generation:** For a group project, we investigated whether neural abstractive summarization systems could be improved if a multi-task learning (MTL) objective was used. Our proposed architecture involved a document encoder that was shared across all tasks, and a task-specific decoder for each one of our MTL objectives (e.g. POS, NER).
- **Neural machine translation:** For an NLP class, I extended a pyTorch neural machine translation system with a lexical model (Nguyen & Chiang, 2017) and evaluated its performance.
- **Parsing:** For a NLP class, I did a qualitative and quantitative evaluation of the Stanford PCFG parser (Klein and Manning, 2003) and the Stanford Neural Dependency parser (Chen and Manning, 2014).
- **Semantic code search:** I am currently investigating whether a re-ranking model can improve the performance of a semantic code search system.

Awards

- Class Prize for Artificial Intelligence and Computer Science (*Graduated in 1st place in Edinburgh AI & CS cohort; 1 recipient*)
- Howe Prize for Top Performance in UG4 Artificial Intelligence (*Highest aggregate grade in 4th year undergraduate AI cohort; 1 recipient*)
- British Computing Society Prize for Top Performing Student in the Professional Issues Course (*Highest grade in 3rd year Professional Issues course; 2 recipients*)
- Canon Medical Research Europe Intern Award 2018 (*Successful execution of internship project*)