Guilherme Ilunga

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Education

Master Degree in Information Systems and Computer Engineering, Instituto Superior Técnico, University of Lisbon *Sep. 2016 – Feb. 2019*

- Master thesis: Single-Objective Optimization for Architecture, advised by Professor António Leitão in the Algorithmic Design for Architecture group
- Specializations in intelligent systems and software engineering
- Relevant coursework and grades: Decision Support Systems (20/20), Information Processing and Retrieval (18/20), Master Thesis (20/20), Natural Language Processing (19/20), Learning and Intelligent Decision-Making (20/20)

Bachelor Degree in Information Systems and Computer Engineering, Instituto Superior Técnico, University of Lisbon *Sep. 2013 – Jul. 2016*

- Academic excellence award for the 2015/2016 academic year
- Relevant coursework and grades: Artificial Intelligence (18/20), Compilers (18/20), Distributed Systems (17/20), Probabilities and Statistics (16/20)

Experience

Applied Scientist, Amazon Development Centre Scotland *May 2021 – Present*

- Responsibilities: large scale data analysis (PySpark and Java Spark), developing and implementing deep learning models (Pytorch and Java), designing experiments, and managing models in production
- Main Projects:
  - Representation learning for contextual user-interest prediction

Research Software Engineer II, Microsoft Research Cambridge *Nov. 2020 – May 2021 and Sep. 2019 – Sep. 2020*

- Responsibilities: implementing deep learning models (Pytorch), designing experiments, and supervising AI residency and internship projects
- Main Projects:
  - Computer vision for hardware systems (Holographic Storage Devices project)
  - Natural language processing for privacy-preserving machine learning (Confidential Computing group)
  - Convolutional neural networks for video classification (confidential project)
  - Recurrent neural networks and transformers for code autocompletion (confidential project)
  - Generative adversarial networks and variational autoencoders for mesh generation (intern project)

AI Resident, Microsoft Research Cambridge *Sep. 2018 – Sep. 2019*

- Main Projects:
  - 3D convolutional neural networks for medical image segmentation (project InnerEye)
  - Recurrent neural networks for smart replies with multimedia content (work done in collaboration with the Microsoft Bellevue team)

Teaching Assistant, Instituto Superior Técnico, University of Lisbon *Sep. 2017 – Jul. 2018*

- Teaching Assistant for the Operating Systems and Distributed Systems courses
- Helped create and evaluate several assignments related with multi-threading/processing in C and Java web services
- Received teaching excellency awards

Internship, Spoken Language Systems Lab, INESC-ID *Jul. 2016 – Sep. 2017*

- Research on machine learning and natural language processing models for poetry generation, advised by Professor David Martins de Matos
- Implemented character and word level recurrent neural networks using Tensorflow

Summer Internships, Link Consulting *Jul. 2016 – Sep. 2016 and Jul. 2015 – Sep. 2015*

- Developed OutSystems and .NET apllications applications with integrated .NET web services for insurance companies

Publications

- Ilunga, G. and Leitão, A. (2018). *Derivative-free Methods for Structural Optimization*. In Education and Research in Computer-Aided Architectural Design in Europe Conference (eCAADe).
- Caetano, I., Ilunga, G., Belém, C., Aguiar, R., Feist, S., Bastos, F., and Leitão, A. (2018). *Case studies on the Integration of Algorithmic Design Processes in Traditional Design Workflows*. In International Conference of the Association for Computer-Aided Architectural Design Research in Asia (CAADRIA).

Other Contributions

Practical Introduction to ML Workshop (Talk) *October 2020*

- Organized workshop as part of the PhD Open Days event at Instituto Superior Técnico, University of Lisbon

JSON-Configparser (Python package) *May 2019*

- Python library to parse and validate JSON configuration files
- The user can specify the type, bounds, defaults, and extra validations of each argument using Typed NamedTuples
- NamedTuple argument object allows typed auto-completion using an IDE, unlike dictionaries
- Useful for validating arguments before running a long process (e.g., training a neural network)