Emily Lewis

GitHub: esl-lewis LinkedIn: emilylewis

Education

PhD Applied Machine Learning (Plasma Physics) **2020-Present**
UCL, Centre for Doctoral Training in Data Intensive Science
Supervisors: Prof. Yiannis Andreopoulos (Primary), Dr Anasuya Aruliah, Dr Stanislas Pamela
Thesis: **Data Driven Plasma Equilibria Reconstruction**

MEng Nuclear Engineering 2:1 **2013-2017**
University of Birmingham, Department of Materials and Metallurgy
Supervisor: Prof. Alessandro Mottura
Thesis: **Stacking Fault Energy Predictions in Austenitic Stainless Steels**

Technical Experience

Data Scientist (PhD Placement) **March 2021-June 2021**
NCC Group, London
- Investigated the use of machine learning models to distinguish between malware and benign software samples.
- Contributed to an ensemble classifier that included XGBoost and deep graph convolutional neural networks. The model displayed excellent classification accuracy (98.9%) when compared to state of the art tools.
- Delivered a technical report to facilitate future work by NCC collaborators.

Graduate Teaching Assistant **2020-2021**
UCL, London
- Assisted with teaching the *Programming with Python* and *Version Control with Git* software carpentry workshops.

Research Software Engineer **2018-2020**
Rutherford Appleton Laboratory, Science and Technology Facilities Council (STFC), Oxfordshire
- Developed the search tool for the front-end of the Diamond Light Source data storage service.
- Ran Monte Carlo neutronics simulations for a proposed nuclear reactor design. Combined results with fluid dynamics models and published as a conference paper.
- Developed Python data management tools for scientists at the ISIS Muon and Neutron Source.
- Built a preproduction Openstack instance of the STFC cloud to enable patch and update testing.
- Deployed MISP, a threat intelligence platform, for a proof-of-concept security operation centre at the STFC Cloud.
- Undertook a 3-month placement at the Culham Centre for Fusion energy. Deployed a continuous integration tool to demonstrate automatic validation of neutronics modeling software.

Research Intern **June 2016-August 2016**
University of Birmingham, Birmingham
- Contributed Python scripts to a toolkit that provided support for materials simulation models.

Skills

Languages: Python (Proficient), Bash, C++, JavaScript, MATLAB (Basic)
Tools/Frameworks: Git, TensorFlow 2.x, scikit-learn, Docker, React

Awards

Software Sustainability Institute Fellowship, £3000 **2020**
STFC Studentship, Centre for Doctoral Training in Data Intensive Science, UCL **2020**

Publications

E. Lewis, G. Cartland-Glover, S. Rolfo, C. Moulinec, D. Emerson, B. Merk "Modelling the draining of a molten chloride salt reactor", 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Portland, Oregon (2019)