JOSEPH ARTHUR EARLY

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EDUCATION AND QUALIFICATIONS

The Alan Turing Institute and University of Southampton 2019 - 2023 (Ongoing)
PhD Candidate

- PhD with the Agents, Interaction and Complexity group at the University of Southampton (UoS).
- Fully funded by The Alan Turing Institute (ATI) Doctoral Studentship.
- Researching Interpretable Multiple Instance Learning, with applications in medical imaging.
- On-going collaboration with the UoS Cancer Sciences department investigating the use of machine learning for predicting response to cancer treatment. Lead to an award-winning publication.
- On-going collaboration within the ATI on regulation of AI. Lead to two publications in law journals.
- Co-founder of the ATI's Entrepreneurship Interest Group. Hosted two events in 2021.
- Student representative for the ATI 2019/20 Doctoral Cohort. Engagement with ATI Management.
- Teaching and marking for UoS undergraduate and master's modules. UoS 2021 VLE Award winner.
- Published software (300+ downloads per month). Published articles (2000+ views per month).
- Contributed to open source software: PyTorch and PyTorch Vision.

University of Southampton 2015 - 2019
Integrated MEng Computer Science *First Class Honours, Average Grade: 83%*

Completed Modules

- Computer Vision (86%)
- Machine Learning (80%)
- Simulation Modelling (92%)
- Intelligent Systems (88%)
- Programming Language Concepts (86%)
- Intelligent Agents (81%)
- Evolution of Complexity (91%)
- Deep Learning (86%)
- Reinforcement and Online Learning (86%)
- Advanced Machine Learning (74%)

- Awarded the Winton Capital Management Prize for top student in Computer Science.
- Won the Master's Group Design Project award for 'Detection of Anomalies in IoT Environments' (81%).
- Completed a dissertation 'Reducing Catastrophic Forgetting when Evolving Neural Networks' (81%).

PUBLICATIONS

- Model Agnostic Interpretability for Multiple Instance Learning, *ICLR*, 2022.
- A Risk-based Approach to AI Regulation: System Categorisation and Explainable AI Practices, *SCRIPTed: A Journal of Law, Technology & Society*, 2022.
- Predicting survival and response to therapy using diagnostic biopsies: A machine learning approach to facilitate treatment decisions for oesophageal adenocarcinoma, *British Journal of Surgery*, 2021.
- Digital pathology and machine learning for prediction of response to neoadjuvant chemotherapy in oesophageal adenocarcinoma, *Journal of Pathology*, 2021.
- Non-Asimov Explanations Regulating AI Through Transparency, *Nordic Yearbook of Law and Informatics*, 2021.
- Predicting response to neoadjuvant therapy using image capture from diagnostic biopsies of oesophageal adenocarcinoma, *European Journal of Surgical Oncology*, 2020.

TECHNICAL STRENGTHS

Computer Languages	Python, PyTorch, Java, C/C++, JavaScript (ReactJS)
Software & Tools	Git, LaTeX, Microsoft Office, Linux OS, VirtualBox, Microsoft Azure
Techniques	Supervised Learning, Reinforcement Learning, Computer Vision, Deep Learning, Genetic Algorithms, High Performance Computing

WORK HISTORY AND EXPERIENCE

BOON 2018 – 2019

Machine Learning Developer

- Worked for a start-up as part of the University of Southampton Future Worlds accelerator.
- Development of a gift recommendation service using personality deduction.
- Developed significant improvements to machine learning systems (50% increase in model performance).
- Heavy involvement in design and development of new systems, as well as contributing to the overall progress of the company by attending events and networking.

DSTL Group Design Project 2018 - 2019

Project Leader, Backend Engineer, and Machine Learning Developer

- Project leader for the Group Design Project in final year of University.
- Worked with DSTL to investigate solutions to anomaly detection in IoT networks.
- Specialised development using machine learning to detect anomalies in sensor activity.
- Developed leadership skills to co-ordinate a team comprising of different specialities.

University of Southampton Summer Internship 2018

Research Assistant

- 12-week summer internship between third and fourth year of University.
- Worked in a University research team developing a platform for Multi-UAV Coordination.
- Ethical and Responsible AI formed a key part of the research.
- The work went on to win a Pilot Project with The Alan Turing Institute and an iCase PhD with Thales.

Roke Manor Research Summer Internship 2017

Full-stack Developer

- 8-week summer internship between second and third year of University.
- Worked on a data consolidation and web development project as a full-stack developer.
- Experienced working to hard deadlines; further developed programming and data processing skills.
- Took an active role in project development such as organising meetings with clients.

ACM and IEEEXtreme 2016 - 2017

Competitive Programmer

- Competed in the 2017 UK and North Western European ACM programming competitions (NWERC).
- Placed first in the UK, and top 10% worldwide in 2017 IEEEXtreme 24-hour coding competition.
- Required efficient, precise programming to solve many problems in a relatively short amount of time.

INTERESTS

- University of Southampton Societies 2015 - 2022
  - Engineers Rugby, Road Cycling, Chess Club, and Mountaineering Club

REFERENCES

Available upon request