

# JOSEPH ARTHUR EARLY

[J.A.Early@soton.ac.uk](mailto:J.A.Early@soton.ac.uk)

[www.jearly.co.uk](http://www.jearly.co.uk)

Last Updated: July 21, 2022

## 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.
- Collaboration with UoS Cancer Sciences department. Lead to an award-winning publication.
- Work within the ATI on regulation of AI. Lead to two publications in law journals.
- UoS Three Minute Thesis 2022 Finalist with *Explainable AI for High Resolution Images*.
- Involved in the academic peer-review process, such as reviewing for Nature Scientific Reports.
- Co-founder of the ATI's [Entrepreneurship Interest Group](#). Hosted three events in 2021/2022.
- 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%)               | · Intelligent Agents (81%)                |
| · Machine Learning (80%)              | · Evolution of Complexity (91%)           |
| · Simulation Modelling (92%)          | · Deep Learning (86%)                     |
| · Intelligent Systems (88%)           | · Reinforcement and Online Learning (86%) |
| · Programming Language Concepts (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.  
**Southampton Bioimaging Symposium: Best Poster Prize.**
- A Risk-based Approach to AI Regulation: System Categorisation and Explainable AI Practices, *SCRIPTed: A Journal of Law, Technology & Society*, 2022.
- 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.  
**BASO Raven Prize: Best Presentation Winner.**

## TECHNICAL STRENGTHS

---

<b>Computer Languages</b>	Python, PyTorch, Java, C/C++, JavaScript (ReactJS)
<b>Software &amp; Tools</b>	Git, LaTeX, Microsoft Office, Linux OS, VirtualBox, Microsoft Azure
<b>Techniques</b>	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.
- 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
  - Engineers Rugby, Road Cycling, Chess Club, and Mountaineering Club

## REFERENCES

---

Available upon request