Mattias Cross

Computer Scientist

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TECHNICAL EXPERIENCE

Darwin Project: Green NLP   **09 2021 – Present**
University of Sheffield   *Sheffield, South Yorkshire*

- Team research project aiming to analyse and improve the efficiency of (pre)training large Language Models such as BERT.
- Investigating new approaches to NLP including non-ML methods to replace certain aspects of pre-training such as Masked-Language Modeling.
- Extensive literature review to understand the state-of-the-art and find areas for improvement.

Stanford iLabs RPi Project   **09 2021 – Present**
University of Sheffield   *Sheffield, South Yorkshire*

- Employed by the faculty of engineering.
- Using Raspberry Pi cameras to set up experiment variables then activating multiple cameras at once, creating a CSV of the variables and their corresponding photos.
- Highly independent, hours organised by self.
- Proof of concept written in Python on Raspberry Pi OS and Windows.

An Immune Inspired Algorithm for Enhanced Fault Tolerant Multimodal Machine Learning   **09 2020 – 12 2021**
University of Sheffield   *Sheffield, South Yorkshire*

- Produced a supervised academic paper on how to improve a multimodal *Smart Gym* by implementing a *Negative Selection Algorithm*.
- Published at the IEEE BIBM 2021 conference workshop: Machine Learning and Artificial Intelligence in Bioinformatics and Medical Informatics (available online)
- Gave a presentation to audience of fellow researchers.
- Learnt many independent organisational skills.
- Worked in a PyTorch Anaconda environment on the university's Linux based HPC.

Software Hut   **09 2019 – 05 2020**
University of Sheffield   *Sheffield, South Yorkshire*

- Worked with a team of Computer Science students to produce a linguistics questionnaire web-app for a real customer.
- Web-app made with Ruby on Rails and other gems including Bootstrap.
- Collaborated using Linux and GitHub, distributed on Heroku.

EDUCATION

MComp Computer Science, *University of Sheffield*	2018 – 2022
A-Level: Maths A, Physics A, Computer Science B, AS: French B, *Richmond School*	2016 – 2018
GCSE: 6 A*, 1 A, 3 B, 1 C, *Richmond School*	2011 – 2016

AWARDS

British Physics Olympiad Bronze Level 2	2016
Duke of Edinburgh Bronze	2015
Arts Award Bronze Level 1	2014
Silver CREST STEM	2013

OTHER WORK EXPERIENCE (RICHMOND, NORTH YORKSHIRE)

Shop Assistant — King Street Kitchen and Gift	2018 – 2019
Station Bar and Restaurant — Front of House	2016 – 2017
Razer Blue — IT Work Experience	2017

Introduction to Software Engineering	70
Foundations of Computer Science	64
Java Programming	76
Machines and Intelligence	57
Web and Internet Technology	70
Global Engineering Challenge Week	Pass
Mind, Brain and Personal Identity	63
Introduction to Algorithms and Data Structures	68
Automata, Computation and Complexity	78
Data Driven Computing	73
Systems Design and Security	63
Functional Programming	91
Engineering - You're Hired	Distinction
Robotics	77
Logic in Computer Science	81
Software Hut	73
Dissertation Project	69
Speech Processing	74
3D Computer Graphics	73
Bioinspired Computing	70
Cyber Security Team Project	73
Finance and Law for Engineers	71
Modelling and Simulation of Natural Systems	72
Adaptive Intelligence	61
Cognitive and Biomimetic Robotics	68
Darwin Project	
Text Processing	
Testing and verification in safety-critical systems	
Machine Learning and Adaptive Intelligence	
Speech Technology	
Natural Language Processing	
Parallel Computing with Graphical Processing Units (GPUs)	

Skills

Programming	Python, Jupyter, PyTorch, LaTeX, MarkDown, Java, C#, C, Haskell, Ruby, HTML/CSS, JavaScript, MATLAB
Technology	Git/GitHub, Linux, ROS, Anaconda, High-performance computing, Raspberry Pi, UNIX, Windows
Languages	English, French