Tom Xiaoding LU

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Education

2016 - 2020 **MEng** in Computer, Control and Bio Engineering
Pembroke College, University of Cambridge
2016 - 2019 Grade: 2.i
Content: Inference and Statistical Signal Processing
3-D Computer Graphics, Control Systems and Neuroscience

2019 - Pres. Grade -
Dissertation: Deep Learning For Koopman Eigenfunctions Discovery
Content: Probabilistic Machine Learning and Deep Learning
Practical Optimisation, Computational Neuroscience, Robotics

2014 - 2016 A Levels, The Perse School Cambridge
Physics Pre-U : D1 ($\geq$A*) Further maths : A* Maths : A*
Chemistry : A Biology (AS) : A

2011 - 2014 GCSEs, King's School Ely
11 subjects graded A*/A, including FSMQ Additional Maths

Work Experience

Jul-Oct 2019 Machine Learning Research Intern at **Onfido**, London, UK (4 Months)
Font Anomaly Detection For Identity Verification
Working within the Fraud Research Team, using classical computer vision, Deep Learning, Gaussian Process and optimisation methods to achieve fraudulent font detection.
Work utilises various neural networks ranging from modified Transformer Networks to Single Shot Detectors to achieve character level extraction from identity documents.
Fraudulent font generation using Gaussian Process Latent Model on font metrologies.

Jul-Sep 2018 Data Science Intern at **ARM**, Loughbrough, UK (12 weeks)
Solving Hardware Verification Issues Using Information Theory
Work is being used on several projects within ARM's Imaging and Vision Group and is presented to all ISP managers across different fields.
Applied information theory and unsupervised methods on verification data.
Project spanned over different departments including Image Quality and C-model teams, various novel image processing algorithms were created.

Aug-Sep 2017 Software Intern at **Cheyney Design**, Royston, UK (8 weeks)
Automated X-Ray Image Analysis Using Computer Vision
Work is currently used within main projects for flow rate and contaminant detection.
Developed theoretical equations to cross-predict contaminants within glass bottles.
Applied time-series analysis to images which resulted in an algorithm that is able to detect image flow rate.

Sep-Oct 2017 Software Intern at **JiRen Clinic**, China (5 weeks)
Digitized entire clinic management system by developing C# applications.

Jul-Aug 2015 Research Intern at **ST Robotics**, UK (4 weeks)
Built and investigated a motorized flywheel driven inverted mechanical pendulum, regulated through its state space equations.

Coursera Courses And Projects

Jul-Sep 2018 | **Natural Language Processing** (HSE, Russia)
Theoretical and Practical (Python) Implementations of NLP
Final project is a StackOverflow chat bot built using NLU and Dialog Manager (DM).
Machine learning approaches of semantic analysis such as Bidirectional RNN.
Mathematical representations of vector space models of semantics such as Skip-gram model (word2vec) and PLSA.
Knowledge of seq2seq model, DM state tracking and policy optimization.

Jul-Sep 2018 | **Machine Learning** (Stanford, USA)
Theoretical and Practical (MATLAB) Implementations of ML Models
Final project involves building a ML pipeline for photo OCR.
Fundimental mathematical representations of Linear and Logistic Regression, Normalization, Neural Networks, SVMs and unsupervised methods.
Knowledge of large scale ML such as batching and SVD.

Aug 2018 | **Bioinformatics Introduction and Methods** (Peking University, China)
Computational Methods of Gene Sequencing
Ontology and pathway identification through sequence database search.
Markov and Hidden Markov Model of sequence alignment.
Next generation sequencing (NGS) and transcriptome analysis, prediction and analysis of noncoding RNAs.

Sep 2018 - Pres. | **TensorFlow on Google Cloud Platform** (Google)
Scalable Implementations of Machine Learning
Efficient data preparation with BigQuery, Apache Beam and Google Dataprep.
Feature creation in TensorFlow and DataFlow (embedding feature crosses, etc).

2016 - 2017 | **Cambridge University Eco-Racing Society**
In charge of the steering and suspension team
In charge of redesigning the steering system and its housing.
Extensive modelling using SolidWorks before prototyping the parts for testing.

Languages

Chinese, English: Fluent, Written and Spoken

Programming Skills

Documentation: LaTeX, Markdown
Intermediate : Tensorflow, scikit-learn, OpenCV, C#, MySQL
Proficient : Python, Matlab

Activities and Sports

Mountaineering | Member of British Mountaineering Society and Austrian Alpine Club
Mountain rescue during expedition in Mongolia (Jul-Aug 2016)
A team of five descended from the highest point in Mongolia rescuing a teammate with life- threatening condition

Sports | Member of the college rowing and rugby team

Referees

Dr Roberto Annunziata
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Dr John Durrell
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