ONG WAI HONG (Imperial MEng, MSc Computer Science)

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SUMMARY

Machine Learning Engineer currently working on developing computer vision models for the physical security industry. I am also conducting my own research into recommender systems in my personal time.

My expertise lie in both Software Engineering and Machine Learning. This ranges from utilizing state-of-the-art techniques in deep learning to push the boundaries of model performance, to developing in-house machine learning libraries and data pipelines, and writing performant CUDA inference code. I am keen on exploring areas of machine learning besides computer vision, as well as learning more about cloud technologies in production.

EXPERIENCE

Vaion Ltd January 2019 - Present

Machine Learning Engineer *London, Greater London, UK*

- My main achievements include the implementation of state-of-the-art deep learning techniques to improve the accuracy of a YOLO-based object detector, as well as successfully leading a project to expand our model to perform end-to-end detection, visual attribute recognition, and re-identification in real-time video.
- Co-developed and optimized inference runtime of trained models to run on commercial GPU's to analyse hundreds of video streams per GPU, in real time.
- Co-developed and maintain custom in-house machine learning library capable of distributed multi-GPU training and inference.
- Co-developed data pipeline using Airflow and AWS services to periodically re-train object detector on user-submitted clips of false positive detections.
- Tools used include Pytorch, Darknet (C++ deep learning framework), Nvidia's CUDNN and CUDA frameworks, as well as REST, gRPC and various other backend tools to serve deployed models.

BMLL technologies October 2018 - December 2018

Machine Learning Intern *London, Greater London, UK*

- Applied statistical regression techniques to market microstructure data to predict transaction costs of limit-orders.
- Successfully reproduced academic results, based on 6 month's worth of historical Level 4 limit-order data from several major European trading venues, as a proof-of-concept for a real system.
- PySpark, Pandas, Tensorflow, Jupyter-Notebooks

Cambridge Mechatronics Ltd August 2015 - August 2017

Control and Test Engineer *Cambridge, Cambridgeshire, UK*

- *Description:* Researcher / Engineer in the Physics Department, worked on projects involving mathematical modelling and development of control algorithms, software and firmware development and testing

PROJECTS

FiML live versison: https://fiml3.herokuapp.com/ repo: https://github.com/whong92/FiML

- Personal project to develop a highly flexible, adaptive recommendation platform for movies, allowing users to choose precisely what data goes into recommendations.
- Django, React, Nginx, Heroku and AWS. Machine Learning powered by RecLibWH (personal project)

RecLibWH url: https://github.com/whong92/recommender

- Personal project - python library written in Tensorflow and Keras for various machine learning techniques for recommender systems, primarily based on Matrix Factorization techniques.
- Interesting methods include: an adaptive variant of the 2008 Netflix prize winning solution, that can adapt to a users interaction with the model in real-time, Probabilistic Matrix Factorization with automatic hyperparameter tuning, and a Tensorflow implementation of the Alternating Least-Squares algorithm.

3d-dl url: https://github.com/921kiyo/3d-dl

- · Developed a synthetic dataset generation technique for efficient deep learning in image classfication
- · Group work culminated in a departmental prize and a publication: https://peerj.com/articles/cs-222/

EDUCATION

Imperial College London *2017-2018*

MSc Computer Science (Distinction - 85.7% Overall)

- · *Thesis* : Asymptotic Queueing Theory Algorithms for Accelerating Computer Performance Modelling (project contributed to: http://jmt.sourceforge.net/, published: https://www.sigmetrics.org/mama/abstracts/Casale.pdf)
- · *Projects*: Efficient Deep Learning for Image Classification of Fixed-Appearance Objects, Gaussian Processes for Hydrodynamic Data Modelling

Relevant Modules: Probabilistic Inference, Logic and AI, Logic-Based Learning, Maths for Machine Learning, OOP, Operating Systems, Formal Systems Verification, Simulation and Modelling

Imperial College London *2011-2015*

MEng Mechanical Engineering (First Class Honours, Dean's List)

Thesis: High Resolution Numerical Methods for Partial Differential Equations

PUBLICATIONS

Novel Solutions for Closed Queueing Networks with Load Dependent Stations - ACM SIGMETRICS Proceedings of MAMA workshop: https://www.sigmetrics.org/mama/abstracts/Casale.pdf *2019*

Synthetic dataset generation for object to model deep learning in industrial applications - PeerJ Computer Science: https://peerj.com/articles/cs-222/ *2019*

SELF-AUDITED COURSES

Cousera - Advanced Machine Learning Specialization (Intro to Deep Learning, Bayesian Methods for ML)
Coursera - Cloud Computing Specialization (Cloud Computing Concepts Part I and II)
UC Davis ATS - Theory of Computation (ECS 120)

AWARDS

Imperial College London - Corporate Partnership Programme Commendation *2018*

For excellence in the Software Engineering Group Project for MSc Computing. Value : £100

Imperial College London - Dean's List (Top 5% of cohort) *2012, 2013, 2014, 2015*