JIN YI YONG

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EDUCATION

University of Southampton, UK   September 2015 - June 2019
MEng(Hons) Electrical and Electronics Engineering   Class achieved: 2nd Upper (2:1)

Elective Modules

Topics of specific interest:
- Engineering Mathematics, Machine Learning (ML), Deep Learning (DL), Computational Finance, Cryptography, Robotic Systems, Secure Systems, Control and Communications

TECHNICAL STRENGTHS

Computer Languages	C/C++, Python, SQL, MATLAB, System Verilog
Software & Tools	LaTeX, Multisim, COMSOL, Excel, OpenAI Gym, Unreal Engine 4
Machine Learning	Tensorflow 2, Pytorch, Keras

RESEARCH EXPERIENCE

University of Southampton - Research Intern   July 2018 - September 2018
Research Project: Genetic Algorithm Design for Optimization of High Altitude Wind Turbine Tip

- Designed an improved Genetic Algorithm by incorporating Fractional Factorial Design Crossover Operator and a Mutation Operator of Random Walk Strategy coupled with Simulated Annealing.
- Introduced improved parameterization for airfoil shapes to control the shape of airfoils efficiently.
- The proposed model successfully generated an airfoil for high altitudes with 3% increase in lift-to-drag ratio, at an faster convergence rate.

University of Southampton Malaysia - Research Intern   June 2017 - September 2017
Research Project: UAV Quadcopter Software Design

- Worked with a partner and successfully produced a UAV Quadcopter prototype that is able to stabilize in roll, pitch and yaw directions.
- Successfully implemented a suitable control algorithm for a UAV Quadcopter to achieve auto-leveling through incorporation of aerodynamics in mathematical modeling of quadcopter.
- Improved control algorithm through sensor fusion by combining data from different sensors to reduce uncertainties in auto-leveling of quadcopter.

University of Southampton - Independent Research   2017- 2018
Research Project: Investigating Protein Corona Formation on Silica Nanoparticles

- Worked in a research environment to investigate the effects of nanoparticle (NP) size, pH of buffer solution and ionic strength on the adsorption of BSA (Bovine Serum Albumin) proteins onto silica nanoparticles (SiO2-NPs).
- Planned experimental test matrix to prepare mixture of buffer solution, BSA, and SiO2-NPs for incubation. Protein corona formation on SiO2-NPs are then quantified by measuring the hydrodynamic diameter of NPs using Dynamic Light Scattering (DLS).
- Gained further insights on the limitations of DLS and the potential extension of project to computational and simulation means to save significant amount of time spent on experimental works.

Group Design Project (Schneider Electric)   September 2018 - January 2019
Low-cost module to enable an industrial switch to self-identify

- Worked in a team of 5 to design and implement a complex module consisting of 4 key areas (NFC module, Analog Circuitry, Micro-controller Software and Application Software) in 3 months.

· Spearheaded the development of analog circuitry and managed the successful deployment of a prototype by rectifying the complex problem and debugging of the complex circuitry.

WORK EXPERIENCE

Machine Learning Engineer March 2020 - Present
AU Optronics Singapore (AFPD Pte. Ltd)

· Company representative in joint research and development of semi-supervised computer vision algorithm with National University of Singapore. Research aims to drastically reduce the need of expensive data labeling, without sacrificing speed, accuracy and the ability of algorithm to generalize.
· Led the team to automate the manual inspection of LCD defects. Task includes statistical processing of vibration signals of manufacturing machine vibrations. Successful deployment of model saved approximately ($104,000) monthly from preventing further manufacturing losses.
· Developed ML models and data pipelines to predict OLED Thin Film thickness within strict accuracy tolerance. Final model achieves a mean-absolute percentage error of 0.2% through statistical methods, enabling deployment of model to predict film thickness, saving expensive labour cost.
· Responsible for training Process Engineers on the basics of AI and ML. This helps engineers to incorporate ML in their domain knowledge, and to facilitate with streamlining manufacturing processes.
· Responsible for designing and developing a centralised and generic system for querying multiple sources of data. This assists engineers with limited SQL and Python knowledge to obtain data required.

PERSONAL PROJECTS

Kaggle Competition: Google Quest Q&A Labelling Challenge

· Worked with a partner to develop a multilabel classification model using BERT, to classify inputs into their respective categories.
· Used Natural Language Processing (NLP) techniques such as word lemmatization and stop words removal to transform words into their base form and remove common words.
· Performed feature engineering, model ensembling, and Exploratory Data Analysis to filter duplicates in dataset and address issue of class imbalance.
· Added a custom classifier module in BERT's architecture and re-trained the model to enable better generalization.

Implementation of AI Behaviour for Non-Player Characters (NPC) in Unreal Engine 4
Lead Programmer

· Collaborated with a partner to enhance the AI behaviour of NPCs. Established the steps required to define project objectives and managed our workload assignment based on individual strengths.
· Worked on designing an environment, custom AI behaviors, the agent's observations, perception, and actions that allow the generation of complex behavior through Deep Reinforcement Learning.
· Implemented Soft-Actor Critic, an off-policy algorithm to maximize both rewards and randomness of NPC agent at the same time.

KEY ACHIEVEMENTS

Facebook Analytics Academy Winner October 2018
Analytics Programmer *Facebook, London*

· Worked in a team of seven and successfully solved analytics challenges under time constraints.
· Ran analysis on mock data using diverse ML techniques to identify strengths and weaknesses of different features considered for the app development.

Microsoft Imagine Cup April 2016
Team Leader *Kuala Lumpur, Malaysia*

· Led a team of four to design and program an app prototype.
· Single-handedly managed the successful deployment of basic functionalities of the prototype app.
· Managed short-sprints and distributed even workload to team members.