DAVID HIN

hello@davidhin.com +61424875767 Adelaide, SA davidhin

Experience

Development of an automated tool for detecting C/C++ software vulnerabilities (Mar 2021 – Oct 2021)

Technologies Used: Python, Docker, PyTorch / PyTorch Lightning

- Conceptualised and implemented an automated software vulnerability detection tool for C/C++ code focused on usability and explainability. The tool leveraged graph neural network architectures to outperform the state-of-the-art model by 104%.
- **Hin, D.** , Kan, A., Chen, H. and Babar, M.A., 2021. LineVD: Statement-level Vulnerability Detection using Graph Neural Networks. *Under Review*.

Development of an automated pipeline for software vulnerability assessment in Java (Jun 2020 – Jan 2021)

Technologies Used: Python, Java, Keras/Tensorflow

- Designed an automated software vulnerability assessment pipeline for Java code using deep learning, achieving 50% higher accuracy and requiring 6.3x less time to train compared to baseline models.
- Le, T.H., **Hin, D.** , Croft, R. and Babar, M.A., 2021. DeepCVA: Automated Commit-level Vulnerability Assessment with Deep Multi-task Learning. In *Proceedings of the 36th IEEE/ACM International Conference on Automated Software Engineering* (CORE A*)

Development of web application for tracking of vulnerable software components (Mar 2020 – Nov 2020)

Technologies Used: React, Node.js, Express, MongoDB, Google Cloud Services, Docker, HTML5/CSS3

- Built and deployed a microservice-based infrastructure and front-end web application for innovatively tracking and analysing vulnerable software components.
- Awarded $10,000 by the Cybersecurity Cooperative Research Centre.
- This project achieved the highest mark for final year Honours project for Bachelor of Engineering (Software) at the University of Adelaide (2020).

Analysis and visualisation of online security vulnerability discussions (Jan 2020 – Mar 2020)

Technologies Used: Python, SQL, Scikit-Learn, Docker

- Leveraged topic modeling and comprehensive data analysis techniques to extract a new taxonomy of thirteen security vulnerability discussion topics from > 20GB of data from online sites, while providing insightful visualisations.
- Le, T.H., Croft, R., **Hin, D.** and Ali Babar, M.A., 2021. A Large-scale Study of Security Vulnerability Support on Developer Q&A Websites. In *Evaluation and Assessment in Software Engineering* (CORE A)

Development of interactive visualisation-based application for spectroscopy analysis (Jul 2018 – Feb 2019)

Technologies Used: R, RStudio, R Shiny

- Created an app to analyse data collected from custom built biological autofluorescence spectroscopy equipment, involving manipulation of raw signal data, unsupervised learning, and dimension reduction techniques.
- Work done as Associate Investigator for Centre for Nanoscale BioPhotonics.

Skills & Competencies

Software Development

Python | C | C++ | Java | Node.js | React | SQL | Ruby | Git | Firebase | Amazon Web Services | Google Cloud Services

Data Science

Pandas | Scikit-learn | PyTorch | Keras | Tensorflow | R/RStudio | Excel | High-performance computing (HPC)

Soft skills

Cross-team collaboration | Mentoring | Project management | Presentation skills

Education

Bachelor of Engineering (Software) with First-class Honours

University of Adelaide

Feb 2017 – Dec 2020

Achievements

- **2015** - Govhack: International Digital Humanities Hack, N3xGen South Australian Champion
- **2016** - Dux of The Heights School, SA
- **2017** - University of Adelaide: Executive Dean's Award for Academic Excellence
- **2018** - University of Adelaide: Executive Dean's Award for Academic Excellence
- **2018** - Australian Oracle User Group Prize, for achieving highest score in Web and Database Computing course
- **2019** - Cybersecurity Cooperative Research Centre Summer Scholarship
- **2020** - University of Adelaide: Executive Dean's Award for Academic Excellence
- **2020** - Cybersecurity Cooperative Research Centre Honours Scholarship
- **2020** - Lifelenz Prize, for achieving the highest Honours mark in Bachelor of Engineering (Software)
- **2021** - Cybersecurity CRC PhD Top-Up Scholarship