

HENG Hian Wee

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Work Experience

Teaching Assistant • **National University of Singapore** Jul 2024 – Present

- Facilitated lab sessions for subject(s) offered in MComp General Track: Software Development Fundamentals
- Assisted with grading assessments and question setup for midterm/finals
- Moderated undergraduate module(s): Introduction to Information Security

Lecturer • **Taylor's College** Aug 2020 – Dec 2022

- Lectured subjects offered at pre-university level (approx. 10-100 students per subject): Introduction to Computing, Web Programming, Object-Oriented Programming, Object-Oriented Analysis and Design
- Developed new syllabi under Taylor's Curriculum Framework 2.0 (TCF 2.0) for all lectured subjects as subject leader.

Research Assistant • **Sunway University** Jan 2019 – Dec 2020

- Involved in development of a real-time traffic planner system for a fog computing environment
- Researched on energy efficiency schemes for wireless communications in fog computing environments
- Project Title: Smart and Security Enhanced Transportation Ecosystem for a Future Sustainable Smart City

Research Support Personnel • **Taylor's University** Jun 2019 – Feb 2020

- Developed Capstone Project Repository (CPR) utilizing PHP, MySQL and Bootstrap 3 for a knowledge management research project; allows for submission of current capstone project reports and viewing past capstone projects
- Prototype web application presented to Dean of Faculty of Innovation and Technology (FIT)
- Project Title: Prescriptive Knowledge Elicitation Model for Knowledge Management

Education

Nanyang Technological University (NTU)

MSc. In Cybersecurity Jan 2023 – Jun 2024 • CGPA 4.00/5.00

- Coursework: Computer Security, Application Security, Cryptography, Security & Risk Management, Network Security, Software Security, Security Monitoring & Threat Detection, Forensics
- Capstone Project: A More Efficient & Accurate Crash Root Cause Analysis based on Large Language Model (LLM)

University of West England, Bristol (UWE)

BSc. Computer Science (Hons) Aug 2015 – Aug 2018 • CGPA 3.80/4.00

- Dual-award program with Taylor's University
- Selected Coursework: Artificial Intelligence, Cryptography, Data Mining, Mobile Application Development
- Final Year Project: International Procurement Online Matching System (IPOMS)
- Activities: Peer-Assisted Learning Services (PALS), First Year Experience (FYE) committee, Christian Fellowship

Selected Projects

A More Efficient & Accurate Crash Root Cause Analysis based on Large Language Model (LLM)

Capstone Project, NTU Aug 2023 – Apr 2024

- Implemented a CLI analysis chatbot tool built with Node.js, TypeScript, and OpenAI's GPT-4 API; tasked to analyze underlying causes of software crashes with comprehensive insights into root issues.
- Conducted unit tests using Vitest to ensure individual components in chatbot work as intended.
- Chatbot accurately determines root causes of software crashes with as low as 15 sets of stack trace information.

A Comprehensive Study on Fancy Bear

SE6014 Security & Threat Monitoring, NTU Mar 2024 – Apr 2024

- Examined malicious behaviors and capabilities of threat actor Fancy Bear against governmental institutions; modeled behaviors based on MITRE ATT&CK Framework.
- Outlined measures to detect evidence/indicators of compromise as a result of similarly motivated threat actors.

CFReDS Project: Hacking Case

SE6016 Forensics, NTU Mar 2024 – Apr 2024

- Performed digital forensics investigation using Autopsy 4 and Registry Explorer in uncovering digital evidence from Mr. Evil's PC disk image: remote access and networking tools to spy on a victim machine and evade detection.

Analysis of Critical Software Vulnerabilities on Google Chrome v80

SE6013 Software Security, NTU Sept 2023 – Nov 2023

- Identified how software vulnerabilities in Google Chrome v80 could be exploited, and outlined defense strategies to combat against similar attacks.
- Learnt how a previously unchecked bug in Google Chrome's JavaScript engine could allow attackers to remotely control a victim's computer.

International Procurement Online Matching System (IPOMS)

Final Year Project, UWE Aug 2017 – Jul 2018

- Developed back-end logic in PHP for retrieving user data from the website to be stored into a MySQL database, as well as information retrieval from the database to be displayed on the web portal prototype.
- Assisted in implementing visual components (e.g., carousel) for the landing page of the web portal prototype.

Leadership & Co-curricular Activities

PALS Leader (Peer Tutor) · Taylor's University Jan 2015 – Jun 2018

- Peer tutored math-centric computing and programming subjects to junior students at Foundation, Diploma, and Undergraduate (Year 1) level.
- Most students placed under "High-Risk" category managed to pass these subjects after at least 2 weeks of attendance

Team Lead · Good Samaritan Home, Klang Apr 2017 – May 2017

- Taught orphaned children aged 9-17 years essential IT skills (MS PowerPoint, Gmail, typing skills) and online awareness
- Activity carried out in partial fulfillment for UCM60102 Community Service Initiative, UWE

Skills / Interests

Programming Languages: JavaScript (ES2015+), TypeScript, HTML/CSS, PHP, C#, SQL, C/C++, Java, Python, Assembly

Programming Libraries & Frameworks: React.js, Next.js, Node.js, Bootstrap 5, SASS, Chakra UI, Tailwind CSS, Radix UI, Daisy UI, Vitest, Prisma

Virtualization & Deployment: VMWare Fusion, Docker, Git/GitHub, Vercel, DigitalOcean, FileZilla, WinSCP, Cyberduck

Security Frameworks & Concepts: CIA Triad, OWASP Top 10, NIST, Cyber Kill Chain, Diamond Model, Pyramid of Pain, MITRE ATT&CK, SQL Injection, XSS Attacks, Buffer Overflow, Content Security Policy (CSP)

Security & Diagnostics Tools: Autopsy 4, FTK Imager, Registry Explorer, Volatility, Kibana, Wireshark, tcpdump, Snort, Yara, Sigma, VirusTotal, Burp Suite, SonarQube, Trivy

Cryptography & Network Security: Block/steam ciphers, RSA, Elgamal, Network Security Protocols, Email Security, Access Control, Authentication & Firewall

Other Skills: UNIX (bash, zsh/OhMyZsh), Postman, Android Studio, Jupyter, Final Cut Pro, Audacity, OBS Studio, Google Analytics

Languages: English, Chinese, Malay

Research Interests: Software Security, Software Testing, Large Language Models (LLMs), Curriculum Development

Publications

S. Srivastava, Y. Wan, **H.W. Heng**, "Description, Implementation and Performance/Security Analysis of ASCON128 V1.2", *International Journal For Multidisciplinary Research*, vol. 5, no. 6., pp. 1-35, 2023, doi: 10.36948/ijfmr.2023.v05i06.10225

References

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Mr. Lee Weng Ken, Senior Lecturer
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