Yichao Xu

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EDUCATION

Johns Hopkins University (JHU) Baltimore, US
MSc in Security Informatics(Expected), GPA:3.84/4.0 08/2021 – 05/2023
- Core modules: Network Security (A+), Security Analytics (A+), Security & Privacy in Computing (A), Ethical Hacking (A),

University College London (UCL) London, UK
MSc Software Systems Engineering (Distinction Awarded), GPA: 3.92/4.00 09/2019 – 12/2020
- Core modules: Verification and Validation (89%), Computer Security I (85%), Software Tools and Environment, Requirement Engineering (80%), Distributed System and Security (79%)

University of Liverpool Liverpool, UK
BSc (Honours) Software Development (First Class Degree), GPA: 3.92/4.00 09/2017 – 06/2019
- Core modules: Principles of C and Memory Management (97%), Software Engineering 1 (93%), Computer Network (90%), Advanced Object-Oriented Programming (91%)

Xi'an Jiaotong-Liverpool University (XJTLU) Suzhou, CN
BSc (Honours) Software Development (2+2, First Class Degree), GPA: 3.54/4.00 09/2015 – 06/2017
- Core modules: Introduction for Algorithm (85%), Introduction for Data Structure (80%), Operation System Conception (89%)

PUBLICATION

- **Yichao Xu**. Using Co-evolution of Artefacts in Git repository to Establish Test-to-Code Traceability Links on method-level. *CONF-CDS 2021*
- Ming Cheng, **Yichao Xu**, Kai Zheng & Xin Huang. A Denial of Services Attack for IOT System. *Science and Wealth ISSN1671-2226*, Issue 3, 2018

RESEARCH

The Investigation and Simulation for the V2X Communication Baltimore, US
Research Assistant 09/2021 – Present
- Investigated the various vehicular communication protocols including both WAVE and ITS5G, especially on its security and reliability mechanisms.
- Investigated the V2X communication simulation, started up from the MiniNet-WiFi to implement seven different use cases for both V2V and V2I communications.
- Implemented the CA and DEN message based on the TCP/UDP protocols, and optimized the previous APIs for vehicle control and communication on MiniNet-WiFi.
- Configured the VEINS with Artery and OpenCV2X for various use cases, successfully configured various extensions with frameworks including Simu5G, INet, etc., and developed some use cases for V2V and V2I
- Implemented the DoS and DDoS attacking on the Artery. Currently also extended to various traditional attacking, detecting, and protecting mechanisms.

Path Explosion Solution Based on Machine Learning Baltimore, US
Research Assistant 05/2022 – Present
- Proposed a potential idea to use the machine learning model as a guide which helps the static analysis program to determine the branches containing the potential threats.
- Optimized and resolved critical bugs in the previous feature extracting program which was used to generate training and testing data set automatically, besides imported some software engineering measures as features like the McComplexity and Healsteal Complexity.
- Importing some deep learning-based technologies for feature extracting like the Graph2Vector and Graphomer which can automatically generate dataset through the special Object Property Diagram in our previous research project.
- Optimized F1 Score to 70+ and improved accuracy to 80+ for all inspection methods

Practice Alliance Chain in Computing to Design Industry Monitoring System Beijing, CN
Researcher, China Academy of Industrial Internet 10/2020 – 03/2021
- Analysed the current industrial system used in the commercial explosive manufacturing processes, including those used in Alibaba and JingDong
- Investigated the blockchain techniques use cases in the IoT system for security protection
- Evaluated research about malicious nodes detection by tracing the information transmissions with blockchain records
- Investigated the possibility to use the edge computing to avoid the current system's performance issue on nodes

Using Co-evolution of Artefacts in GitHub to Establish Test-to-Code Traceability Links London, UK
Researcher 06/2020 – 09/2020
- Analysed the test maintenance approach for six open-source Java projects including the common-lang and common-IO etc.

- Developed a tool for establishing test-to-code traceability links between the test methods and tested functions by co-evolution relationship in GitHub repository
- Optimised the CoEv strategy from the previous papers in three different aspects and methods
- Evaluated the performances of these strategies on the method-level to three open-source Java projects

Android Machine Learning Library for NHS Data Analysis London, UK
System Developer 12/2019 – 04/2020

- Accomplished an "Android Machine Learning Library" with three teams from the NHS and UCL which provided the application developers with a series of APIs to predict the health scores for app users
- Developed the architecture of the library for high appliable and reusable codes, and tested the APIs by automatic test frameworks
- Integrated the APIs with the application from other teams and handled the interaction with backend server by HTTPs protocol

University Intramural Event System Liverpool, UK
System Developer 02/2018 – 05/2018

- Worked with team members to develop an "intramural event system" that allows students or faculties to know about upcoming school events
- Implemented a desktop-side and webpage application simultaneously through electron and nodes.js while the Web-side Foundation was finished
- Independently configured the servers (HTTP, SMTP), MySQL database, and wrote the front-end Web page for refactoring the source code based on HTML and JavaScript
- Wrote most of the system backstage through PHP and implemented a complete Web test process

A Denial of Services Attack for IoT System Suzhou, CN
Researcher 07/2017 – 08/2017

- Simulated the response of a processor after a Denial of Services (DoS) attack in a simple IoT environment and 3 kinds of different DoS attacks were carried out
- Modified some network stress testing tools such as the source code of Low Orbit Ion Cannon (LOIC) to adjust attack parameters so that the attacks were more flexible
- Achieved automatic collection and statistics of experimental results through Python program and sniffed data packet through ARP protocol
- Published a paper entitled "A Denial of Services Attack for IoT System"

EXTRACURRICULAR ACTIVITIES

An Online Project-Based Program about Introduction to Data Sciences from Harvard University 10/2019

- Analysed of messy, real-life data to perform predictions using statistical and machine learning methods
- Obtained the Certificate of the best award and completion of the program

2018 BOSCH China IoT Hackathon 07/2018

- Developed a recyclable express packaging plan by the Internet of Things technologies and independently established the prototype of the entire system, and obtained the Certificate of Outstanding Achievement

Buddy Program, XJTLU 09/2016 – 06/2017

- Provided a series of guidance to first-year students in terms of study and life to help them adapt to university life

InfoCo Club, XJTLU 09/2015 – 06/2017

- Organized study groups to share experience and knowledge in terms of IT, such as C, Java, and Python, to those who have interests in computer technology

HONOURS

The Best Award for the Online Project-Based Program on Introduction to Data Science	10/2019
The Degree of Bachelor of Science with Honours in Software Development (Class I)	07/2019
The Outstanding Achievement in 2018 BOSCH CHINA IoT HACKATHON	07/2018
The Second-Best Project Award in the Distributed Systems BSc module	05/2018
The Most Innovative / Creative Robot in ROBOTICS COMPETITION	03/2016

PROFESSIONAL SKILLS

Java (5years), Kotlin (1year), Swift (1 year), Python (4 years), PHP (1 year), JavaScript (2 years), C (1 year)