

Yebo Feng

Ph.D. candidate at the Center for Cyber Security and Privacy, University of Oregon

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Research Interest

- **Network Security & Privacy:** intrusion detection; DDoS defense; social network security & Privacy.
- **Network Traffic Analysis:** content-agnostic network traffic analysis; large-scale traffic measurement.
- **Blockchain & Web 3.0 Security:** blockchain traffic analysis; DeFi security & privacy, DEX & AMM security.
- **Machine Learning in Security:** usable ML-based attack detection and defense system.

Education

- 2018-Now** **Ph.D.** in Computer and Information Science
Department of Computer and Information Science, **University of Oregon**
Adviser: Prof. Jun Li
- 2016-2018** **M.S.** in Computer and Information Science
Department of Computer and Information Science, **University of Oregon**
Adviser: Prof. Jun Li
Master Thesis: BotFlowMon: Identify Social Bot Traffic with NetFlow and Machine Learning
- 2012-2016** **B.E.** in Computer Science and Technology
College of Information Engineering, **Yangzhou University**
Adviser: Prof. Xiaohua Xu
Bachelor Thesis: Clustering Algorithm Based on Density Sort and Valley Point Competition

Publication

Peer-Reviewed Publication

- **CJ-Sniffer: Measurement and Content-Agnostic Detection of Cryptojacking Traffic**
Authors: Yebo Feng, Jun Li, Devkishen Sisodia
The 25th International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2022), Limassol, Cyprus, October 2022
DOI: 10.1145/3545948.3545973
- **Reap the Harvest on Blockchain: A Survey of Yield Farming Protocols**
Authors: Jiahua Xu, Yebo Feng (corresponding author)
IEEE Transactions on Network and Service Management (TNSM), November 2022
DOI: 10.1109/TNSM.2022.3222815
- **SoK: Decentralized Exchanges (DEX) with Automated Market Maker (AMM) Protocols**
Authors: Jiahua Xu, Simon Cousaert, Krzysztof Paruch, Yebo Feng (corresponding author)
ACM Computing Surveys (CSUR), November 2022
DOI: 10.1145/3570639

- **University Blockchain Research Initiative (UBRI): Boosting blockchain education and research**
Authors: Yebo Feng, Jiahua Xu, Lauren Weymouth
 IEEE Potentials, vol. 41, no. 6, pp. 19-25, November-December 2022
 DOI: 10.1109/MPOT.2022.3198929
- **I Can Still Observe You: Flow-level Behavior Fingerprinting for Online Social Network** (Accepted)
Authors: Yebo Feng, Jianzhen Luo, Chengyan Ma, Teng Li, Liang Hui
 2022 IEEE Global Communications Conference (GLOBECOM 2022), Rio de Janeiro, Brazil, December 2022
- **CoAvoid: Secure, Privacy-Preserved Tracing of Contacts for Infectious Diseases**
Authors: Teng Li, Siwei Yin, Runze Yu, Yebo Feng, Lei Jiao, Yulong Shen, Jianfeng Ma
 IEEE Journal on Selected Areas in Communications (JSAC), October 2022
 DOI: 10.1109/JSAC.2022.3211547
- **Towards Learning-Based, Content-Agnostic Detection of Social Bot Traffic**
Authors: Yebo Feng, Jun Li, Lei Jiao, Xintao Wu
 IEEE Transactions on Dependable and Secure Computing (TDSC), vol. 18, no. 5, pp. 2149-2163, 1 September-October 2021
 DOI: 10.1109/TDSC.2020.3047399
- **POSTER: Content-Agnostic Identification of Cryptojacking in Network Traffic** (Poster)
Authors: Yebo Feng, Devkishen Sisodia, Jun Li
 The 15th ACM ASIA Conference on Computer and Communications Security (ASIACCS 2020), Virtual Conference, October 2020
 DOI: 10.1145/3320269.3405440
- **Toward Explainable and Adaptable Detection and Classification of Distributed Denial-of-Service Attacks**
Authors: Yebo Feng, Jun Li
 The First KDD Workshop on Deployable Machine Learning for Security Defense (KDD MLHat 2020), Virtual Conference, August 2020
 DOI: 10.1007/978-3-030-59621-7_6
- **Application-Layer DDoS Defense with Reinforcement Learning**
Authors: Yebo Feng, Jun Li, Thanh Nguyen
 IEEE/ACM 28th International Symposium on Quality of Service (IWQoS 2020), Virtual Conference, June 2020
 DOI: 10.1109/IWQoS49365.2020.9213026
- **Towards Explicable and Adaptive DDoS Traffic Classification** (Poster)
Authors: Yebo Feng, Jun Li
 The 21st Passive and Active Measurement Conference (PAM 2020), Virtual Conference, March 2020
 DOI: 10.13140/RG.2.2.28826.80327
- **BotFlowMon: Learning-Based, Content-Agnostic Identification of Social Bot Traffic Flows**
Authors: Yebo Feng, Jun Li, Lei Jiao, Xintao Wu
 IEEE 7th Conference on Communications and Network Security (CNS 2019), Washington DC, USA, June 2019
 DOI: 10.1109/CNS.2019.8802706
Best Paper Award

Thesis, Tech Report, Preprint, and Other

- **Toward Finer Granularity Analysis of Network Traffic**
Author: Yebo Feng
 University of Oregon, Area Exam Report, Mar 2022
 URL: <https://www.cs.uoregon.edu/Reports/AREA-202203-Feng.pdf>
- **Measuring Changes in Regional Network Traffic Due to COVID-19 Stay-at-Home Measures**
Authors: Jelena Mirkovic, Yebo Feng, Jun Li
 arXiv preprint, Mar 2022. URL: <https://arxiv.org/abs/2203.00742>

- **Towards Intelligent Defense against Application-Layer DDoS with Reinforcement Learning**

Author: Yebo Feng

University of Oregon, Directed Research Project (DRP) Report, Dec 2019

URL: <https://www.cs.uoregon.edu/Reports/DRP-201912-Feng.pdf>

- **BotFlowMon: Identify Social Bot Traffic with NetFlow and Machine Learning**

Author: Yebo Feng

Master Thesis, Scholars' Bank - University of Oregon, 2018

URL: <http://hdl.handle.net/1794/23799>

Paper under Review & in Preparation

- **On Explainable and Adaptable Detection of Distributed Denial-of-Service Traffic**

Authors: Yebo Feng, Jun Li, Devkishen Sisodia, Peter Reiher

Submitted to: IEEE Transactions on Dependable and Secure Computing (TDSC)

- **CryptIF: Towards Cloud-based IoT Anomaly Detection over Encrypted Feature Streams**

Authors: Teng Li, Baokun Fang, Yebo Feng, Lei Jiao, Zhuo Ma, Jianfeng Ma

Submitted to: 2023 IEEE International Conference on Computer Communications (INFOCOM 2023)

- **CToMP: A Cycle-task-oriented Memory Protection Scheme for Unmanned Systems**

Authors: Chengyan Ma, Ning Xi, Di Lu, Yebo Feng, Jieyue Ding, Jianfeng Ma

Submitted to: The 18th ACM ASIA Conference on Computer and Communications Security (ASIACCS 2023)

- **Unmasking the Internet: A Survey of Fine-Grained Network Traffic Analysis**

Authors: Yebo Feng, Jun Li

Plan to submit to: IEEE Communications Surveys & Tutorials (COMST)

- **Toward Adaptive Distributed Filtering of DDoS Traffic**

Authors: Jun Li, Devkishen Sisodia, Yebo Feng, Lumin Shi, Mingwei Zhang, Samuel Mergendahl, Chris Early, Peter Reiher

Plan to submit to: 2023 USENIX Security Symposium

Experience

Sep 2022 - *Research Assistant*

Present Center for Cyber Security and Privacy, University of Oregon, Eugene, U.S.

- Research on application-layer anomaly detection with network-layer traffic data.
- Design and evaluate privacy-preserving decentralized exchange (DEX) with automated market makers (AMMs).

Jun 2022 - *Visiting Research Assistant*

Sep 2022 Information Sciences Institute, University of Southern California, Marina del Rey, U.S.

- Design and implementation of fine-grained network host fingerprinting for anomaly detection and intelligent troubleshooting agents.

Jun 2022 - *Researcher (part-time)*

Sep 2022 Ripple Labs, Inc., San Francisco, U.S.

- Help coordinate research projects and events under the University Blockchain Research Initiative (UBRI), a partnership between Ripple and top universities around the world to support academic research, technical development and innovation in blockchain, cryptocurrency, and FinTech.
- Collect, synthesize, and report on high-quality blockchain-related research. Connect Rippers with relevant research projects, papers, and scholars.

- Sep 2021 - Jun 2022** *Research Assistant*
Center for Cyber Security and Privacy, University of Oregon, Eugene, U.S.
- Research on application-layer web activity inference with network-layer traffic data (*supported by Ripple Research Fellowship*).
 - Develop adaptive distributed denial of service (DDoS) attack defense (*supported by the Science and Technology Directorate of the United States Department of Homeland Security under contract number D15PC00204*).
 - Design and evaluate privacy-preserving decentralized exchange (DEX) with automated market makers (AMMs).
- Jun 2021 - Sep 2021** *Research Associate*
Ripple Labs, Inc., San Francisco, U.S.
- Help coordinate research projects and events under the University Blockchain Research Initiative (UBRI), a partnership between Ripple and top universities around the world to support academic research, technical development and innovation in blockchain, cryptocurrency, and FinTech.
 - Study, evaluate, and organize academic papers from UBRI researchers.
 - Cooperate with researchers from University College London (UCL) on research related to decentralized exchange (DEX) with automated market makers (AMMs).
- Dec 2018 - Jun 2021** *Research Assistant*
Center for Cyber Security and Privacy, University of Oregon, Eugene, U.S.
- Research on examining online social network fraud and attacks with privacy-enhancing machine learning (*supported by the United States National Science Foundation under Grant No. 1564348*).
 - Research on machine-learning-based detection of cryptojacking activities in network traffic (*supported by Ripple Research Fellowship*).
 - Design and development of in-network-based DDoS defense solutions (*funded by the Science and Technology Directorate of the United States Department of Homeland Security under contract number D15PC00204*).
- Jun 2020 - Oct 2020** *Research Intern*
China Academy for Information and Communications Technology (CAICT), Beijing, China.
- Research on the establishment of network security standards for medical IoT devices.
- Sep 2018 - Dec 2018** *Teaching Assistant - CIS 451 Database Processing*
Department of Computer and Information Science, University of Oregon, Eugene, U.S.
- Mar 2018 - Jun 2018** *Lab Instructor & Teaching Assistant - CIT 281 Web Applications Development I*
Department of Computer and Information Science, University of Oregon, Eugene, U.S.
- Dec 2017 - Mar 2018** *Lab Instructor & Teaching Assistant - CIS 110 Fluency with Information Technology*
Department of Computer and Information Science, University of Oregon, Eugene, U.S.
- Sep 2017 - Dec 2017** *Teaching Assistant - CIS 451 Database Processing*
Department of Computer and Information Science, University of Oregon, Eugene, U.S.
- Jun 2017 - Sep 2017** *Research Assistant*
Network & Security Research Laboratory, University of Oregon, Eugene, U.S.
- Research on examining online social network fraud and attacks with privacy-enhancing machine learning (*supported by the United States National Science Foundation under Grant No. 1564348*).
- Mar 2015 - Mar 2016** *Software Engineer*
Gaobiao Xianjin Co, Ltd., Shenzhen, China
- Development of the company website (CSS, HTML) and the product management system (Java SE development kit).

Jul 2015 - *Software Engineer Intern*
Sep 2015 Chinasoft International Ltd., Shanghai, China
• Development of mobile applications with Android SDK.

Honor, Award, & Fellowship

Aug 2022 *RAID 2022 Student Travel Grant*, Organizing Committee of RAID 2022
Jun 2021 *Ripple Graduate Fellowship 2021 - 2022*, Ripple Labs, Inc.
Sep 2020 *Ripple Graduate Fellowship 2020 - 2021*, Ripple Labs, Inc.
Aug 2020 *KDD 2020 Student Registration Award*, National Science Foundation
Aug 2019 *Ripple Graduate Fellowship 2019 - 2020*, Ripple Labs, Inc.
Jun 2019 *2019 Gurdeep Pall Graduate Student Fellowship*, University of Oregon
Jun 2019 *2019 IEEE CNS Best Paper Award*, IEEE ComSoc
Jun 2019 *2019 IEEE CNS Student Travel Grant*, IEEE ComSoc
2017-2018 *Graduate Teaching Fellowship*, University of Oregon
2014-2015 *Second-Class Chancellor's Scholarship of Yangzhou University*, Yangzhou University

Professional Service

- Reviewer - IEEE Transactions on Dependable and Secure Computing (TDSC).
- Reviewer - IEEE Transactions on Information Forensics & Security (TIFS).
- Reviewer - IEEE Transactions on Mobile Computing (TMC).
- Reviewer - IEEE Journal on Selected Areas in Communications (JSAC).
- Reviewer - ACM Transactions on Knowledge Discovery from Data (TKDD).
- Reviewer - Security and Communication Networks (SCN).
- Reviewer - Financial Innovation (FIN).
- Reviewer - IEEE/ACM International Symposium on Quality of Service (IWQoS): 2021, 2022.
- Judging Committee - XRPL Grants: Wave 3 and Wave 4, 2022.
- Program Committee - ACM International Conference on Information and Knowledge Management (CIKM): 2022.
- Technical Program Committee -
International Conference on Cyber-Technologies and Cyber-Systems (CYBER): 2020 – 2022.
- Technical Program Committee -
International Conference on Emerging Security Information, Systems and Technologies (SECURWARE): 2020 – 2022.
- International Program Committee - Blockchain and Cryptocurrency Congress (B2C): 2022.
- Artifact Evaluation Committee - USENIX Symposium on Operating Systems Design and Implementation (OSDI): 2022.
- Artifact Evaluation Committee - USENIX Annual Technical Conference (ATC): 2022.
- Web Team Member - ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD): 2021.
- Student Volunteer - ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD): 2020.

Skill

- **Programming Languages:** Python, Java, C, C++, JavaScript, PHP, SQL, Bash, Matlab, OCaml
- **System/Network Tools:** Open vSwitch, Mininet, Kafka, RabbitMQ, sflowtool, NetFlow, NFDUMP, cgroups
- **Machine Learning Libraries:** PyTorch, TensorFlow, Scikit-learn, Keras, Weka, OpenAI Gym
- **Other Development Tools:** Vim, make, SVN, Git, JetBrains IDEs, \LaTeX

Reference

Name Prof. Jun Li
Affiliation University of Oregon
Contact lijun@cs.uoregon.edu

Name Prof. Lei Jiao
Affiliation University of Oregon
Contact jiao@cs.uoregon.edu

Name Prof. Jelena Mirkovic
Affiliation USC Information Sciences Institute
Contact mirkovic@isi.edu

Name Lauren Weymouth
Affiliation Ripple
Contact lweymouth@ripple.com