Jing Yan

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Education

- **ETH Zürich** — Zürich, Switzerland
  Major in Cyber Security, Minor in Machine Intelligence; — *Sep 2023 - Present*
  Courses In progress: *Security Engineering, Network Security, Probabilistic AI, Applied Cryptography, Big Data*
- **Tianjin University** — Tianjin, China
  Major in Computer Science; — *Sep 2019 - June 2023*
  GPA: 3.84/4.0 | Rank:top 2%

Skills Summary

- **Programming & AI frameworks** C/C++, C#, Java, Kotlin, Flutter, Rust, Python, JavaScript, PyTorch, Tensorflow
- **Mobile & web technologies** Android Studio, Retrofit/Okhttp3, Material Design, HTML/CSS, JavaScript, Vue, Qt
- **Tools** Kubernetes, Docker, GIT, PostgreSQL, MySQL, SQLite
- **Languages** Chinese (native), English (proficient)

Publications

- Z. Shi*, **J. Yan***, X. Tang, L. Lyu, and B. Faltings. *RLCP: A Reinforcement Learning-based Copyright Protection Method for Text-to-Image Diffusion Model.* arXiv:2408.16634, 2025.
  Accepted by the 2025 IEEE International Conference on Multimedia and Expo (ICME).

Research Experience

- **Artificial Intelligence Laboratory - EPFL** — Lausanne, Switzerland
  Research Assistant — *Mar 2024 - Aug 2024*
  - Developed a novel Reinforcement Learning-based algorithm for Text-to-Image **Diffusion Model**, aimed at minimizing copyright-infringing content while maintaining image quality.
  - Proposed a new copyright metric grounded in legal standards, incorporating semantic and perceptual similarity to assess potential copyright violations in generative models.
  - Conducted experiments on mixed datasets of copyrighted and non-copyrighted images, demonstrating the method's effectiveness in significantly reducing copyright infringement risk while preserving the quality of generated images.
- **Software Analysis and Intelligence Lab - TJU** — Tianjin, China
  Research Assistant, advised by Associate Professor Junjie Chen — *Sep 2021 - June 2023*
  - Designed and implemented a novel method for locating compiler bugs that combined program generation and reduced optimization construction.
  - Utilized machine learning methods such as reinforcement learning with **Pytorch** and designed mutation algorithms to generate test programs that could more effectively locate bugs.
  - Implemented a plugin for gdb tools to avoid dummy tests and solved the shortcomings of the previous method, improving dummy file detection accuracy by 20%.
  - Identified and organized 100 reproducible defects in **PyTorch** and **TensorFlow**, constructing a comprehensive defect localization dataset.
  - Designed and implemented an automated reproduction framework for enhanced dataset utilization, demonstrating strong scalability and potential in various testing scenarios.
- **Data Intensive Software Analytics Lab - UofC** — Calgary, Canada
  MITACS Globalink intern, advised by Assistant professor Gias Uddin. — *Jul 2022 - Sep 2022*
  - Conducted research and authored reports on automated code vulnerability detection for code on public platforms such as StackOverflow and GitHub, which achieved 80% detection accuracy.
  - Constructed an **ETL** pipeline to get code data and developed deep learning vulnerability analysis tools with **Pytorch**, which outperformed state-of-the-art methods by 5%.
  - Investigated potential causes of performance variances on different platforms and applied new network structures such as **GraphCodeBert** to better resolve the issue.
- **Laboratory of Machine Learning and Data Mining - TJU** — Tianjin, China
  Research Assistant, advised by Assistant Professor Yu Wang — *Sep 2020 - June 2021*
  - Designed a learning network for identifying indoor users to grant permission for free Wi-Fi access in public areas.
  - Processed complex high-dimensional CSI and RSS data via **MATLAB**, and divided the experimental areas to improve the accuracy of the classification model.
  - Built feature extraction AutoEncoder through neural network with Python & Pytorch, and classified data with One-Class SVM to check user validity, which achieved 90% accuracy in evaluation.
  - Drafted the research paper entitled Cascade One-Class Learning Network Using Physical Layer Information for Wi-Fi Coverage Confining, which is under review in IEEE Network Magazine.

Work Experience

- **KylinSoft** Tianjin, China
  Software Engineer Intern at KylinSoft *Apr 2022 - Jun 2022*
  - Led a team of engineers to develop a tool that analyzes the power consumption of system processes, which helps users and developers to better understand the power consumption of computers.
  - Created a dynamic power consumption data dashboard with **tableau**.
  - Implemented the product's UI with Qt, signal slots, and parsed **HTML** and **JSON** files to process back-end data.
  - Optimized code for better performance by conducting code reviews and refactoring code.

- **Microsoft** Beijing, China
  Software Engineer Intern at Microsoft STCA *Jul 2021 - Sep 2021*
  - Designed and developed an APP for Windows OS users to easily manage personal computers.
  - Implemented a responsive UI for the app with **C#** and developed the back-end of PC-side products with **C/C++** to handle high concurrency and job scheduling.
  - Conducted research work related to data embedding and used **Kusto** for data query and analysis.

- **TWT Studio, TJU** Tianjin, China
  Software Engineer of the Android Team *Jul 2020 - Jul 2022*
  - Developed Wei Peiyang, a one-stop platform that allows students to communicate with school management and service departments, which achieved **800k+** registered users and **1000k+** daily API requests.
  - Iterated Android Java projects with **Kotlin** and **Flutter** based on the existing open-source Android framework.
  - Wrote comprehensive unit and UI tests to verify the correctness of the app across different scenarios.
  - Held instruction sessions for the team on Flutter learning path, design mode and other Android development techniques.
  - Utilized multithreading and coroutines in various projects, which improved the app's performance and stability.

Competitions

- **National College Students Operating System Design Competition** Online, China
  Apr 2021 - Aug 2021
  - Redesigned and implemented MIT's xv6-riscv project using **Rust**, and ported its kernel to Rust.
  - Utilized the Buddy System and slab to optimize physical memory allocation and treated it as the global allocator for the use of alloc library of Rust.
  - Implemented basic protocol stack and certain network card drivers; won the third prize in the National Finals.

- **Cyber Security Lab of TJU** Tianjin, China
  Jul 2020-Present
  - Took part in CTF competitions with a focus on the areas of cyber attack and reverse engineering; won the first prize of the 4th "Qiangwang Cup" National Cyber Security Challenge.

- **2020 International Genetically Engineered Machine Competition (iGEM)** Online, China
  Jul 2020 - Nov 2020
  - Guided the wiki group and the design group of the whole team;
  - Coded the website with **JavaScript** and **jQuery** to realize page interactions and animation effects (https://2020.igem.org/Team:TJUSLS_China), won a silver medal in the finals.

- **International Collegiate Programming Contest (ICPC)** China
  Dec 2019 - Sep 2021
  - Participated in algorithm competitions such as ICPC and CCPC; won the Bronze Medal in 2020 ACM-ICPC Asia Regional Contest and the Bronze Medal in 2021 ACM-ICPC Shaanxi National Invitational Contest.

Honors and Awards

- Outstanding Graduate Award, Tianjin University, 2023
- Win the 2021 - 2022 Huawei Cloud Field Scholarship - November, 2022
- Win the 2020 - 2021 Arawana Scholarship - November, 2021
- Win the 2019 - 2020 Excellent Students Awards - October, 2020