Kaiwen Xue

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EDUCATION

- **Columbia University** — New York, NY
  Bachelor of Arts in Computer Science — *Sep. 2020 - May 2022 (Expected)*
  - **GPA**: 4.06/4.33. The school does not disclose class ranks.
  - **Honors**: School of General Studies Honor Society, Dean's List of School of General Studies all semesters

- **City University of Hong Kong** — Hong Kong
  Bachelor of Science in Computer Science — *Sep. 2017 - May 2020*
  - **GPA**: 3.99/4.30. Rank: top 5% in 110 CS majors. The school does not disclose exact class ranks.
  - **Honors**: HKSAR Government Scholarship, Dean's List of College of Engineering all semesters

EXPERIENCE

- **Columbia University**
  Undergraduate Research Assistant. Supervisor: Prof. Jason Nieh — *May 2021 - Current*
  - Worked on the implementation of SeKVM: a secure cloud hypervisor based on Kernel-based Virtual Machine (KVM)
  - Ported the functionalities originally implemented in Linux Kernel 4.18 to 5.6.19 to increase the project's compatibility
  - Tested the kernel on different ARMv8 machines by running KVM performance benchmark
  - Working on the SeKVM's support of the live migration of virtual machines

- **Columbia University** — New York, NY
  Teaching Assistant. COMS W4118, Operating Systems I. Instructor: Dr. Jae Woo Lee — *Sep. 2021 - Dec. 2021*
  - Course topics: general design principles of operating systems; advanced UNIX programming; Linux kernel hacking
  - Maintained course codebase, held office hours, graded homework assignments

- **NetX Lab, City University of Hong Kong** — Hong Kong
  Undergraduate Research Assistant. Supervisor: Prof. Hong Xu — *Jul. 2019 - Jul. 2020*
  - **Tyrus**: Developed the decision-making module for frame dropping decision in WebRTC's C++ codebase
  - **TyStream**: Developed a full-stack platform supporting testing of video streaming systems with parameters from different networking layers

PUBLICATIONS

- Tyrus: Deadline-Aware Adaptive B-frame Transmission for Real-time Video Conferencing
  Libin Liu, Jingzong Li, Hong Xu, **Kaiwen Xue**, Wei Zhang. To be submitted to IEEE Transaction on Cloud Computing, 2022.

PROJECTS

- **Linux Kernel Hacking**
  C, X86 Assembly, Linux Kernel Programming — *Jan. 2021 - Apr. 2021*
  - Developed various functionalities in the Linux kernel, new system calls, process state tracer, a new scheduler, a pseudo page table mapped to user space from kernel, an in-memory file system storing process page information
  - Designed user space programs to test these functionalities

- **SAVA – Style-Attentional Void-Aware Style Transfer**
  Python, PyTorch, Computer Vision, Deep Neural Network — *Jun. 2020 - Aug. 2020*
  - A neural style transfer framework utilizing void areas by leveraging attention maps of content and style images
  - Designed the neural network architecture and implemented it in PyTorch
  - Trained and evaluated the network on MSCOCO dataset with different hyperparameters

TECHNICAL SKILLS

- **Languages:** C/C++, Python, Java, SQL, HTML/CSS/JavaScript, Assembly, Haskell, PHP
- **Frameworks & Tools**: Linux Kernel, TensorFlow, PyTorch, NumPy, Matplotlib, Java Swing, Socket (C/C++ and Python); Makefile, Vim, Git, Google Colab, GoogleTest, JUnit, MySQL/DataGrip, AWS