Haoyun Qin 秦浩允

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EDUCATION

University of Pennsylvania   Aug 2022 – Expected May 2025

Bachelor of Science in Engineering, Computer Science (Dean's List | GPA: 3.99 / 4.00)   *Philadelphia, PA*

Relevant Coursework: Algorithms, Computation Theory, OS, ML, DBMS, Compiler, PL Theory, Formal Methods, Architecture

RESEARCH EXPERIENCE

PennDB, University of Pennsylvania   September 2024 – Present

Research Assistant, advised by Prof. Ryan Marcus   *Philadelphia, PA*

- Researching on Formally Verified Query Optimizers

Infini AI Lab, Carnegie Mellon University   May 2024 – Present

Research Assistant, advised by Prof. Beidi Chen   *Pittsburgh, PA*

- Worked on efficient long context LLM systems
- Research on efficient video diffusion systems

NetDB, University of Pennsylvania   Nov 2022 – Present

Research Assistant, advised by Prof. Boon Thau Loo   *Philadelphia, PA*

- Researching on formal methods for BGP network, continuing work from summer 2023   Jan 2024 – Present
- Worked on project *BFTGym*: An Interactive Playground for BFT Protocols   Dec 2023 – Jan 2024
- Worked on project *BFTBrain*: Adaptive BFT Protocols with Reinforcement Learning   Nov 2022 – Dec 2023

Independent Researcher   Aug 2023 – Present

Project leader & Collaborator, with Prof. Chengze Li@SFU and Dr. Hanyuan Liu@Spellbrush   *Remote*

- Proposed *Hyperstroke*, a novel high-quality stroke representation for assistive artistic drawing
- Working on cartoon and motion manga generation with better controllability

ShanghaiTech University   May 2023 – Aug 2023

Visiting Scholar & Research Assistant, advised by Prof. Haoxian Chen   *Shanghai, China*

- Worked on formal methods for BGP network using SMT solvers and rewrite logic

PUBLICATIONS

Peer-reviewed Papers

- Hyperstroke: A Novel High-quality Stroke Representation for Assistive Artistic Drawing   **SIGGRAPH Asia 2024**
  Haoyun Qin, Jian Lin, Hanyuan Liu, Xueting Liu, Chengze Li
- BFTBrain: Adaptive BFT Consensus with Reinforcement Learning   **NSDI 2025**
  Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, Ryan Marcus
- BFTGym: An Interactive Playground for BFT Protocols   **VLDB 2024**
  Haoyun Qin, Chenyuan Wu, Mohammad Javad Amiri, Ryan Marcus, Boon Thau Loo
- Towards Truly Adaptive Byzantine Fault-Tolerant Consensus   **OSR 2024**
  Chenyuan Wu, Haoyun Qin, Mohammad Javad Amiri, Boon Thau Loo, Dahlia Malkhi, Ryan Marcus
- Towards Full Stack Adaptivity in Permissioned Blockchains   **VLDB 2024**
  Chenyuan Wu, Mohammad Javad Amiri, Haoyun Qin, Bhavana Mehta, Ryan Marcus, Boon Thau Loo
- Scalable Virtual Gate Extraction For Silicon Quantum Dot Devices   **DAC 2024**
  Shize Che, Seongwoo Oh, Haoyun Qin, Yuhao Liu, Anthony Sigillito and Gushu Li

Preprint & Under submission
- Controllable Cartoon Generation   **SIGGRAPH 2025**

SKILLS

Programming: Python, C, Java, Rust, Swift, Go, OCaml, Coq, JavaScript, Dafny, Assembly, C#, Verilog, Maude, Clingo

Technologies: PyTorch, iOS SDK, Android SDK, Unix Programming, Linux, Arduino, Docker, Git

Language: Chinese (Mandarin, Shanghainese), English (TOEFL 110/120, ACT 34/36), Japanese (JPLT N2)

PROJECTS

CNN-based CJK Font Recoginizer | *PyTorch, Python, Gradio, C, Docker* Apr 2023
- *First-ever* CJK (Chinese, Japanese, Korean) font recognizer and style extractor (Github 400+ Stars)
- More than 5000 TrueType / OpenType fonts supported
- Distributedly synthesized 200GB dataset of various layout and styling
- An online demo built using Gradio, hosted on Huggingface Space through Docker

Dungeon Assistant | *Python, Open3D, Java, Android* Dec 2023
- A *scalable* indoor localization system based on WiFi RSSI and LiDAR-based 3D reconstruction
- 3D reconstruction via overlapping sliding window, ICP registration and post closure optimization
- Full-functional data collection pipeline for both signal and point clouds
- An demo Android application for indoor localization of UPenn Engineering Quad

Ayase – A Search-based Accessibility Navigation Tool | *C# .NET, C++* Aug 2021
- A cool accessibility tool that can help people navigate on-screen elements using keyboard by text search
- Supports applications built from various technologies including Electron, Web, Qt, WPF, UWP, etc.

PennOS – A User-level Unix-like Operating System | *C* Dec 2022
- Implemented FAT16 file system, a round robin process scheduler, global and process file descriptor table
- Supports OS level locking, semaphore, redirection, pipelining along with a user-level shell implemented

AWARDS

CRA Outstanding Undergraduate Researcher Awards, Honorable Mention Dec 2023

National Olympiad in Informatics (Provincial) in Shanghai, First Prize (2020), Second Prize (2019) 2019–2021

Regeneron International Science and Engineering Fair (ISEF), Grand 4th Prize in System Software May 2021

High School Mathematical Contest in Modeling (HiMCM), Meritorious Award Nov 2019