

Hanbo Guo

Champaign IL | (217) 200-1473 | hanbog2@illinois.edu
github.com/Haannbboo | linkedin.com/in/hanbo-guo

Education

University of Illinois, Urbana Champaign, Illinois, US

Expected May 2024

Bachelor of Science in **Computer Science**

GPA: 3.86 / 4.00

Interests: *Networking, data engineering, distributed systems, computer security*

Programming language:

Proficient in Python and C (C is approachable just like Python)

Professional Experience

Data Engineering Intern, Game AI Center, **Tencent Holdings**

May 2023 – August 2023

- Part of Data Pipeline team, responsible for developing high-throughput asynchronous crawling framework and backend Flask RESTful with ORM models for database operations.
- Crawler uses aiohttp and pypeteer, achieving 10x speed up compared to synchronous programs.
- Crawler is 100% configurable using Yaml: **crawls** incrementally, stores raw data in customizable **data lake** (Amazon S3 were used), triggers daily **ETLs** to clean data, stores cleaned data in customizable **data warehouse**.
- Developed an ORM model with SQLAlchemy in back-end to simplify data manipulation for the development team, supporting complex MySQL queries and write-ahead logging, and added a security layer to prevent SQL injection.
- Developed multiple Vue.js web pages with back-end Flask RESTful API, supporting cross-team DevOps.

Course Assistant at **UIUC**

Aug 2022 – Dec 2023

- CA for Computer Architecture and Distributed Systems, responsible for hosting office hours and grading.

Project Experience

RSSI-based Hidden Camera Localization

Sept 2023 – Present

- Device fingerprinting by one-vs-rest classifying device types from Wi-Fi 802.11 layer packets with multi-time resolution aggregation.
- Developed RSSI-IMU based localization. Step detection using IMU sensor fusion to calculate step magnitudes, apply a Butterworth low-pass filter for noise reduction, and linearly interpolate step sizes based on step magnitudes. Localize using spatial interpolation over grid average RSSI.

EVE-Online REST API, *Python* (GitHub: [link](#))

March 2022 – Present

- Provide RESTful market data API for EVE-Online, a MMORPG game. Developing a data pipeline for retrieving, formatting, and storing market data from EVE servers, with multiple SQLite database that caches intermediate results, such as API responses, JWT / SSO results, E-Tag headers.

Convolution Kernel, *CUDA*

March 2023 – May 2023

- Developed a forward pass of a convolution kernel using CUDA C++, with optimization techniques such as tiled shared memory convolution, input channel reduction using tree reduction and atomic operations, async memory copy.
- Profiled implementation performance using nsys and Nsight-Compute and reported to the class.

IDunno, a distributed ML inference engine, *Python* (GitHub: [link](#))

Sept 2022 – Dec 2022

- Developed a fault-tolerant and scalable Ray-like distributed system from scratch (sockets), with group membership service, distributed storage, and fair-time scheduling, and deployed on a cluster with 10 Linux machines.
- Implemented a purely distributed group membership service using multicast dissemination with a ring backbone and SWIM failure detector.
- Distributed file system ensures total ordering and can tolerate up to $f = 3$ machine fail-stops with replication control, and all file transfers are implemented from scratch via TCP sockets.
- The inference engine accepts a wide range of models (Resnet-50, Alexnet, etc.) and tolerates $f = 3$ failures.
- Implemented a Fair-Time scheduling algorithm to ensure a maximum 20% query inference time difference among all running models.