

# Kaile Ying

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Personal Home Page: [http://binltools.fun/about\\_me](http://binltools.fun/about_me)

Github: <https://github.com/BinL233>

## EDUCATION

### The Pennsylvania State University

University Park, PA | Aug. 2020 - May 2024

- Major: BS in Computer Science | Minor: Mathematics
- Cumulative GPA: 3.63/4.0 | Upper Division GPA: 3.85/4.0
- Honor: Dean's List (for FA 2021, SP 2022, FA 2022, SP 2023, FA 2023 semesters)

## INTERNSHIP

### DaoCloud Network Technology Co., Ltd. | Back-end Developer Intern

Shanghai | May 2023 - Aug. 2023

- **Development and Integration:** Developed and maintained DaoCloud Enterprise 5.0, a Cloud Native platform, and assisted in developing the Cloud Native foundation.
- **Cloud Platforms for Artificial Intelligence:** Actively contributed and integrated the KubeRay project to enhance the Cloud Native infrastructure for AI models.
- **Kubernetes Proficiency:** Demonstrated proficiency in deploying Kubernetes clusters, utilizing Kubebuilder to construct Kubernetes API Resources and CRDs, and implementing Webhooks for validation and mutation capabilities.

## RESEARCH

### Deep Learning for ChIP-nexus | Deep Learning Engineer

Harvard University, MA | Aug. 2023 - Present

Adviser: Jiecong Lin

- Developed a FASTA file extractor to process DNA sequences, ensuring compatibility with deep learning model input specifications.
- Engineered a system to parse .bed files, extract genomic peaks, and correlate them with signal intensity indices from .bw files for enhanced data analysis.
- Designed and implemented a custom fit function within the PyTorch framework to optimize deep learning models, focusing on the intricacies of loss functions, neural network architectures, and the mechanics of forward and backward propagation.

## PROJECTS

### Swapp

University Park, PA | Jan. 2024 - Present

- Implemented Ionic as a cross-platform framework and TypeScript as the primary language; utilized Supabase to connect to the application and Vonage for user communication on the database side
- Worked in the Backend group for function development, including user and post-data management.

### Memory Management Implementation

University Park, PA | Jan. 2024 – Mar. 2024

- Understood and constructed the malloc, free, realloc, and calloc functions.
- Utilized 16-byte alignment for space optimization through footer optimization and automatic merging of adjacent free blocks, as well as throughput optimization using segregated free lists and best of 5 fit Insertion Policy.
- Established a prologue and epilogue to determine the heap boundary.
- Developed the heap checker function to verify the expected state of the manipulated heap.

### Revive - Focus App for iOS [[Repository](#)][[Apple TestFlight](#)]

University Park, PA | Oct. 2023 - Present

- Crafted a focus assist system by SwiftUI, with a customizable timer for various focus modes: hatching, training, and exploring, which encourages users by increasing their operant conditioning and achievement motivation.
- Implemented analysis tools for users' focus tracking by showing distribution graphs for time and frequency per week/month/year.
- Integrated CloudKit and CoreData for real-time cloud data synchronization to avoid the risk of loss of user data.

### Kueue [[Website](#)][[Repository](#)]

Shanghai | May 2023 - Present

- Severed as an active contributor to this open-source project and made significant contributions to enhance the project's Features.
- Successfully debugged multiple Flaky Tests to ensure the reliability of the project, improved the project's documentation and optimized the content on the project's website to make it more comprehensive and user-friendly.

- All the Pull Requests have been merged into the newest released version.

### Personal Website [[Website](#)][[Repository](#)].

University Park, PA | Jun. 2022 - Present

- Developed a comprehensive web application using Gin as the web framework, Golang as the back-end language, and HTML, CSS, and JavaScript for the front-end, coupled with a MySQL database.
- Implemented user authentication and session management using JWT and Session, created various features including number system conversion, reaction tests, and a Live2D module, and utilized Docker to store and serve images from the cloud.
- Leveraged Kubernetes to set up clusters and deploy the web application, achieving a multi-node cloud service.

### Operating System Design [[Repository](#)]

University Park, PA | Jan. 2023 - Mar. 2023

- Designed and implemented virtual memory to physical memory mapping, page scheduling algorithms (FIFO, LRU, CLOCK), and multi-process support.
- Developed CPU/IO multi-threading using spin locks, mutex locks, and thread scheduling algorithms like FCFS and SRJF.
- Implemented TLB caching to optimize memory request handling, enhancing system performance when TLB hits.

### CPU Organization and Design [[Repository](#)]

University Park, PA | Jul. 2022 - Aug. 2022

- Constructed a pipelined CPU using Vivado software and the Verilog programming language.
- Implemented a 5-stage pipeline, comprising Instruction Fetch, Decode, Execution, Memory Access, and Write Back stages, using Xilinx design tools for FPGAs.

### All Projects

- Link: <https://github.com/BinL233/my-projects>

## COMPETITIONS & AWARDS

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### DJI RoboMaster Competition in IEEE International Conference | 2nd Place

Philadelphia, PA | May 2022

- Engaged in the embedded system development, including applying C in Keil to realize the robot's functions, like movement, shooting, and connection between the robot and the controller.
- Debugged and tested the robot using STMStudio in aspects of code modification and PID speed control.
- Applied OpenCV in the motherboard which is connected to the depth camera for recognition of specific targets for automatic aiming after model training.

### Nittany AI Challenge | Top 20

University Park, PA | Feb. 2022 - May 2022

- Spearheaded the development of an algorithm and program that could assist blind people in online shopping.
- Built speech recognition tool powered by Google Web Speech API, which converts users' sounds to certain text and commands.
- Applied libraries like selenium and requests to perform search, add to cart, filter, buy, and more features.

### ASA DataFest | Best Data Visualization Team

University Park, PA | Mar. 2022

- Stored, classified, and analyzed data that related to the behaviors of adolescents using AWS S3 and R Studio.
- Integrated and visualized dataset by Tableau and developed a completed presentation video in Premiere Pro.

## TEACHING EXPERIENCE

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### The Pennsylvania State University | CSE Grader

University Park, PA | Sept. 2023 - Present

- Assisted in grading 340 assignments of the CMPSC465 Data Structures and Algorithms course per week.
- Discussed assignments with teaching assistants for the improvement of efficiency and precision.

## TECHNICAL SKILLS

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- Proficient in Python, Golang, Swift, Kubernetes, Docker, Git, Linux, Premiere Pro
- Skilled in C, MySQL, Tableau, Adobe Photoshop
- Good in Java, HTML, CSS, JavaScript
- **RoboX:** developed and field-tested robots for competitions

## HOBBIES

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- Beatbox, Guitar, & Music Game
- Video Production & Editing (posted in social platforms, with over 6,000 followers and 2,000,000 page views)
- Painting