

# WILLIAM ZENG

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## EDUCATION

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**The University of Chicago** | Chicago, IL | *Computer Science (B.S) & Media Arts and Design (Minor)* *Expected, May 2024*

- **Relevant Courses:** Algorithms, Databases, Computer Security, Computer Systems, Software Development, Linear Algebra, Discrete Mathematics, Human Computer Interaction, Robotics, Mobile Computing, Engineering for Ethics, Cryptography

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## WORK EXPERIENCE

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**BAE Systems, Inc** | Rome, NY | *Software Engineering Intern* *June 2023 - Present*

- Significantly reduced **cognitive complexity** in a **Java** codebase on **Azure DevOps** by 70% through refactoring using **SonarQube**.
- Engineered **Bash** script for command-line sequence to enable step by step debugging, improving operational efficiency by **75%**.
- Automated log retrieval system for BAE's **cloud infrastructure** using **Docker** containers (CentOS7 and RHEL environments), **Python** scripts, and **Kubernetes** commands. Further incorporated pod configurations with **Zookeeper** using **Golang** script.
- Optimized log retrieval script by introducing **parallel computing** techniques, strategically dividing log retrieval tasks across multiple threads, leading to an increase of more than **80%** in script efficiency and faster download from a **Python** web server.
- Integral in developing, maintaining and optimizing **cloud infrastructure deployment** to **on-premise** systems using **Terraform**.

**Pixpher LLC** | Fort Wayne, IN | *Backend Software Engineer Intern* *May 2022 – August 2022*

- Orchestrated a robust database capable of hosting up to 500 concurrent portfolios for photographers and photographer clients.
- Engineered efficient **REST** clients in **Node.js**, seamlessly delivering user data from **Mongo DB** to **React Native** frontend.
- Demonstrated adept project management by leading back-end development efforts, collaborating effectively with multiple departments to gather design feedback and feasibility. Leveraged **Spring Boot** and **Express.js** frameworks to accomplish goals.

**Plasticity Project** | Chicago, IL | *Frontend Software Developer Intern* *June 2021 – May 2022*

- Developed a cross-platform **React Native** app with AWS and MongoDB backend to raise awareness about marine plastic pollution.
- Utilized React Native libraries for key functionalities, including animated splash screen, functional buttons, and in-app reviews.

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## PERSONAL PROJECTS

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**Crusty DB** – Relational Database Management System built in **Rust**.

- Designed and implemented page functionality for efficient data storage, including indexing, deserializing, and serializing capabilities.
- Developed a robust storage manager utilizing **heap files**, enabling data storage as bytes within containers, facilitating **in-memory** operations, and ensuring data **persistence** to files during system shutdown.
- Spearheaded the implementation of a sophisticated volcano model, incorporating various query operators such as **hash join**, **aggregate** functions, and **group by** clauses, enhancing the database's **query** processing and **optimization** capabilities.

**Mobile Cooking** – **Swift** phone application for simulated cooking with educational and entertainment value.

- Combined the attitude and acceleration thresholds to create an algorithm that accommodates differences in methods to chop and sauté with simulated cooking utensils and differences in a user's dominant hand.

**FreeFinders** – User-based application that records locations on campus where free items are being distributed.

- Proficiently utilized **Swift** libraries, including CLLocation Manager, to handle user permissions for location sharing.
- Maintained code quality by implementing and conducting thorough unit testing, achieving **15/15** branch, statement and path coverage.
- Enhanced application efficiency by evaluating and selectively implementing advanced sorting algorithms such as merge sort, loop bodies, bubble sorts, and insertion sort, resulting in **50%** performance improvement in speed for finding closest items to user.

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## LEADERSHIP

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**Advance Illinois** | Project Leader *March 2023 - Present*

- Developed a web application utilizing **React** and **FastAPI**, enabling users to generate PDF summaries from **Excel** inputs.
- Managed **3** teams of up to **5** members to establish expectations, suggest ideas, and promote a collaborative **Git** workspace.
- Established and maintained transparent communication with clients, ensuring a shared understanding of **UX/UI** expectations.

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## COMPUTING SKILLS

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- **Programming Languages:** Python, Java, Swift, C, C++, JavaScript, SQL, Rust, HTML/CSS, Scheme, LaTeX, C#, Golang
- **Technologies:** React Native, Postman, Kubernetes, Terraform, MinIO, Zookeeper, AWS, Azure DevOps, Docker, Rancher, Git, Spring Boot, Node.js, Express.js, Spacy, Sklearn, ROS, Postman, XCode, VSCode, IntelliJ, Jupyter Notebook, Linux, SonarQube