# Xinyi Guan

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## EDUCATION

**Purdue University**                                                                                                    West Lafayette, IN
*Bachelor of Science in Computer Science, Concentrate on Software Engineering — **GPA:** 3.81/4.0*          *Expected: May 2026*

## TECHNICAL SKILLS

**Program Languages**: Java, C, C#, C++, Rust, Python, HTML/CSS, JavaScript, Visual Basic.NET, SQL, Dart
**Developer Tools and Frameworks**: Git, Google Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Visual Paradigm, PuTTY, CVAT, Jupyter Note, Vocareum, Coverity, CodeQL, XCode, Android Studio, OverLeaf, Facebook Infer, MySQL, SQLite, NoSQL, Microsoft Office Suite, AWS, JWT, Flask, Spring Boot, Flutter, Unity, JUnit, Tor Network, Node.js, MongoDB
**Languages**: English, Mandarin

## EXPERIENCE

**The Data Mine Program Researcher**                                                                            January - May 2024
*Assessing Reactive Groups and Reactivity Alerts in the CAMEO Chemicals Database*                    *West Lafayette, IN*
- Conducted data mining and analysis on the CAMEO Chemicals Database, in collaboration with CAS, to explore the relationship between reactive chemical groups and associated reactivity alerts.
- Implemented **Python-based** data analysis techniques, including **K-means clustering** and **the elbow method**, to identify patterns and correlations in the dataset.
- Utilized **cross-correlation heatmaps** and **PCA plots** to present findings and aid in the understanding of chemical reactivity patterns.

**Vertically Integrated Project Researcher**                                                                   August - December 2023
*Analysis of Food Processing Crystal Image*                                                                            *West Lafayette, IN*
- Improved manufacturing processes and product quality by developing an automated analysis tool for sugar crystal microscope images with TinyML teammates and Harvard researchers.
- Used **Python** to implement a machine learning model based on **Hough Transform** for bubble detection and removal, significantly improving image analysis accuracy and efficiency.
- Optimized image pre-processing techniques, including noise removal, binarization, and adaptive thresholding, and integrated the **Stardist model** for precise crystal separation.

## PROJECTS

**Bareturn0;** | *Unity, AWS, MongoDB, Node.js, JavaScript, C#, Git, Figma*                          January 2025 - Present
- Developed a full-stack educational card game with card game mechanics that integrates programming concepts and basic math into gameplay, enhancing learning through interactive storytelling and gamification with a team of 4.
- Engineered a secure backend with **Node.js and JavaScript**, and develop the frontend with **C# and Unity**. Used **MongoDB** as database, **AWS** as cloud platform. Created and designed an intuitive user interface and user flow with **Figma**.

**FooMyFood** | *Spring Boot, Flutter, MySQL, Figma, Google Cloud Platform, Java, Dart, Git* Auguest - December 2024
- Designed a mobile app to help individuals track food inventory, receive expiration reminders, and get personalized recipe suggestions, reducing food waste and simplifying meal planning with a team of 4.
- Developed a full-stack application using **Dart and Flutter** for the frontend, **Spring Boot and Java** for the backend, **MySQL** for database management and used **Google Cloud** as our cloud platform. Created an intuitive user interface and user flow with **Figma**, enhancing accessibility and engagement.

**FTP Server Testing Framework** | *FTP Server, Python, Valgrind, Git*                                June - August 2024
- Designed and implemented a comprehensive testing framework to evaluate buggy versions of the bftpd **FTP server** using **Python**, focusing on black-box testing and memory bug detection with **Valgrind**.
- Collaborated with a team of 3 to streamline workflow and developed automated test cases to identify and document bugs.

**Publish-Subscribe Blog** | *Bento, Tor Network, SQLite, Flask, JWT, Python*                       Auguest - December 2024
- Developed a Python-based secure publish-subscribe blog application using the **Bento** framework, integrated with the **Flask** web framework and **SQLite** database.
- Enhanced user anonymity by incorporating the **Tor network**, enabling access through a .onion domain.
- Implemented key functionalities including user registration, authentication with **JSON Web Tokens (JWT)**, message publishing, deletion, and recovery, utilizing Bento's API for secure message handling.