

# Yinding Zhang

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## EDUCATION:

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- Purdue University**, West Lafayette, IN *Expected May 2023*  
M.S. Industrial Engineering **GPA 3.95 / 4.0**  
**Coursework:** Convex Optimization | Nature-Inspired Computation | Stochastic Models in Operations Research | Advanced Decision Theory | Operating System | Artificial Intelligence | Quantum Computation | Quality Control
- Johns Hopkins University– Nanjing University Center**, Nanjing, China Jun 2020  
Certificate Program in International Relations
- Ocean University of China**, Qingdao, China Jun 2019  
B.S. Computational Mathematics

## SKILLS:

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- **Programming Languages:** Java, C, Python, SQL, MATLAB
- **Libraries and Frameworks:** OpenCV, PyTorch, Scikit-Learn, Numpy, Pandas, Matplotlib, Spring MVC
- **Tools and Platforms:** Gurobi, Tableau, Unix/Linux, Docker, Git, Microsoft Excel

## EXPERIENCE:

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- Climate Feedback and Global Warming** - Prof. Jian Ma, Shanghai Jiao Tong University Aug 2020 – Jan 2021  
*Research Associate (Full-time)*
- Built a feature extraction algorithm specially optimized for cloud clusters and edges from videos via OpenCV, greatly improved the accuracy of binocular stereo matching
  - Assisted in developing a drone-based cloud observing system. Reimplemented **Binocular Stereo Vision** and dynamic camera calibration MATLAB program in Python and OpenCV, which achieved **100x** faster speed
  - Solved computational problems in climate research by diagnosing problems and utilizing new computing frameworks to process computation bottlenecks e.g. multiplication and singular value decomposition of super-scale matrices.
  - Deployed an open source massively parallel simulation infrastructure (PyCLES) via Docker to conduct climate simulation
- Yext China Co., Ltd**, Shanghai Apr 2020 – Jul 2020  
*Data Engineer (Intern)*
- Tracked and analyzed the data of more than **3000** offline stores from **20** brands. Used automated Excel spreadsheets to generate reports. Synchronized results with dominant search and map service providers by API protocol
  - Built and maintained a data pipeline in Python and **SQL** that matches and aggregates data entries from multiple sources
  - Designed a new workflow and developed two Python programs to automatically fetch, format data, and compose Excel reports. Greatly reduced the workload of daily tasks and improved the work efficiency by **60%** overall
  - Maintained and improved business core algorithms of address matching and text segmentation

## PROJECTS:

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- On-demand Meal Delivery with Drone Resupply** - Prof. Seokcheon Lee  
*Master thesis*
- Purposed a promising drone-supporting model for meal delivery to lift efficiency called the resupply model. The model addresses important real-world constraints of drones and can be seamlessly integrated into the existing delivery process
  - Built Mix-Integer-Linear-Programming (MILP) formula constraints for the drone resupply model routing problem and solved it through Gurobi
  - Designed Adaptive Large Neighborhood Search – Simulated Annealing heuristics for large-scale routing problems. Built an expandable framework to implement the heuristics from scratch via Java, which can solve **100+** nodes size instances stably
  - Compare the performance of new drone-supporting models with the existing system in multiple settings with real-world delivery meal order data (*ongoing*)

### XINU Operating System

- Xinu is a small, elegant operating system for embedded environments, developed by Purdue Xinu Lab
- Implemented process ownership and hybrid process schedule framework including three kinds of schedulers: Aging, Shortest Remaining Time First, and Multilevel Feedback Queue
- Implemented process synchronization tools e.g. read-write lock with priority. Implemented priority inheritance protocol to solve priority inversion problem which can lead to erroneous system behavior particularly serious in real-time systems
- Implement a whole file system from scratch, including journaling for crash recovery

### Tofu: A Spring and MyBatis based BBS system

- Designed an online BBS web application and implemented RESTful API via Spring MVC including registration, post, fetch, reply, delete, etc. Built the client-side interface with Bootstrap
- Implemented features including GitHub OAuth login, Markdown editor support, and picture uploads. Feed users the hottest and most recent posts and Notify users of related replies
- Utilized MyBatis to access and operate the data storage with MySQL

### Business Analysis of P2P credit platform

- Provided insights on business optimization through the analysis of loan data (with 320,000 entries and 21 features)
- Conducted quantitative analysis of different loan businesses (e-commerce installments, App fast loan, etc.) through Tableau dashboard and draw cumulative income curves
- User profiling. Investigated borrowing rate tolerance and repayment behavior of users with different characteristics. Applied multiple machine learning models (SVM, Random Forest, etc.) to predict users' repayment behavior via Python