Chan Um

West Lafayette, IN · umc@purdue.edu · (765) 685-3283 · http://linkedin.com/in/chanum · https://www.chanum.dev/

EDUCATION

Purdue University   West Lafayette, IN
B.S. in Computer Science concentrating on Machine Intelligence, Minor in Mathematics   Aug 2020 – May 2026 (expected)
- **Relevant Coursework:** Data Structures & Algorithms, Systems Programming, Data Mining & Machine Learning
  - **Honors & Development:** Dean's List (Fall 2023 – Present); CodePath Intro to Technical Interview Prep certificate (Summer 2025)

EXPERIENCE

Johns Hopkins University (Ahn Lab)   Baltimore, MD
Undergraduate Researcher   May 2025 – Present
- Developed a computational screening pipeline using data from DepMap, PubChem, and ChEMBL to identify drug candidates for breast cancer
- Evaluated drug efficacy metrics by testing between linear and logarithmic, and exponential weighting models to determine the most accurate scoring method for compound prioritization
- Analyzed cancer organoid movement under various treatment conditions (ixazomib, DMSO, dinaciclib)
- Generated high-dimensional visualizations (heatmaps, histograms, polar maps) to interpret cell alignment and drug efficacy

Kihara Lab   West Lafayette, IN
Undergraduate Researcher   Mar 2025 – Present
- Modernizing bioinformatics computational architecture for protein function prediction tools (PFP, Phylo PFP, ESG)
- Designed backend with Python (Flask) and frontend with React.js to improve query efficiency for researchers

Purdue University Korean Association   West Lafayette, IN
Webmaster Team Quality Assurance   Jan 2024 – Dec 2024
- Conducted pre-deployment testing of web features, documented detailed test cases, and streamlined QA processes, significantly reducing production bugs and accelerating developer response times
- Improved user experience (UX) by identifying, documenting, and addressing critical usability issues

Republic of Korea Army   Daejeon, South Korea
Motor Transport Operator   Aug 2021 – Feb 2023
- Completed 18 months of military service, coordinating logistical operations for a team of 50+ personnel; enhanced leadership, teamwork, and strategic planning skills

PROJECTS

Multi-Threaded HTTP Web Server (C++)   Nov 2025
- Developed a concurrent web server from scratch, capable of handling multiple client requests via thread pooling
- Implemented basic authentication and directory browsing features, utilizing low-level system calls for process management

Lab Experiment Tracker (React, Flask, SQLAlchemy)   Nov 2025
- Developed a full-stack web application to centralize and streamline the tracking and analysis of laboratory experiments, replacing inefficient spreadsheet-based methods
- Designed and implemented the core relational database schema in SQLAlchemy, establishing the data model for experiments, researchers, and results

Image Super-Resolution Converter (Pytorch)   Oct 2025
- Implemented a Super-Resolution Residual Network (SRResNet) to perform 2x image upscaling, optimized by enabling bfloat16 (BF16) automatic mixed precision
- Trained the model using L1 loss to produce sharper, more realistic image reconstructions compared to traditional MSE loss.

Optimal Pathfinding System (C++, Systems & Algorithms)   Apr 2025
- Built a pathfinding application to identify optimal routes under cost/time constraints
- Implemented Dijkstra's algorithm to compute the shortest travel time and integrated the Floyd-Warshall algorithm to determine minimal distance paths between every pair of gates

INVOLVEMENT

- Social Media Manager - Purdue Korean Association
- Member - Purdue Astronomy Club, ACM, Korean-American Scientists and Engineers Association

TECHNICAL SKILLS

Programming Languages: Java, Python, R, MATLAB, C/C++, JavaScript, HTML/CSS, Perl, SQLite
Frameworks: FastAPI, Flask, TensorFlow, Scikit-learn, PyTorch
Tools and Technologies: React, Git/Github, IntelliJ, VS Code, RStudio, Blender, Jupyter Notebook