

Jiajun (Leo) Tan

jiajun.leo.tan@gmail.com | (267) 667-4374 | github.com/JiajunLeoTan | linkedin.com/in/leo-tan

EDUCATION

University of Pennsylvania

M.S. in Computer Science & Mechanical Engineering, GPA: 3.63/4.0

Philadelphia, PA

Aug 2024 – May 2027

– **Concentrations:** Systems, Mechatronics, Robotics

– **Coursework:** Software Systems, Internet & Web Systems, Database System, Advanced Artificial Intelligence, Machine Learning, Machine Perception

The University of Melbourne

B.S. in Mechanical Engineering, GPA: 3.55/4.0; Mobility Award recipient

Melbourne, VIC, Australia

Mar 2021 – Jul 2024

– **Concentrations:** Mechatronics, Robotics

EXPERIENCE

Superstars

Software Developer Intern

Remote, United States

Jan 2026 – Present

- Built a unified video player component (Angular/TypeScript) standardizing playback, comments, likes, and related-video interactions across the social/content-sharing platform, shipping to production across 20K+ video posts and reducing duplicated logic by 60% versus the legacy implementation.
- Owned the create-post flow on the Angular front end – media selection/upload, composition, client-side validation, and submission against the platform's Node.js/Express + MongoDB REST API – reaching a 65% draft-to-publish conversion rate; wrote unit and end-to-end tests for every component delivered and verified REST flows via Postman.

Modular Robotics Laboratory (PI: Prof. Mark Yim), University of Pennsylvania

Summer Research Assistant

Philadelphia, PA

May 2025 – Aug 2025

- Wrote Arduino (C++) firmware for stepper motor control with rheostat input and LCD feedback driving a direct ink write printer's rotation/extrusion module; debugged end-to-end across mechanical, electronics, and control software to achieve 180 rpm rotation with $\pm 0.5^\circ$ positional accuracy and 60 mm/s extrusion within a \$500 budget, contributing to a chapter in an upcoming lab publication.

University of Pennsylvania

Teaching Assistant, MEAM 5100 Design of Mechatronic Systems

Philadelphia, PA

Aug 2025 – Dec 2025

- Revamped the Introduction to Microcontrollers lab module by rewriting code examples and procedures and patching deprecated libraries from the prior-year handout; supported 70 graduate students through office hours, debugging, prototyping, and grading.

SOFTWARE & DATA PROJECTS

- **Axiom Shopping Assistant (CIS 5500):** Built and deployed a shopping analytics platform on PostgreSQL/AWS RDS, Express/Node, and React/Vite over **1.4M+ Amazon products and 3.0M+ reviews** (Python ETL); achieved up to **12,000× query speedup** and **322 s → 494 ms** on the top-value query via composite indexing, materialized views, and EXPLAIN ANALYZE rewrites.
- **PennCloud Distributed Cloud Platform (CIS 5050):** Built a from-scratch cloud platform (webmail + storage + admin) with a custom multithreaded C++ HTTP server, UDP-heartbeat dispatcher for load-balanced redirection, distributed KV store with primary-based sequential consistency, triple replication, operation logs, checkpointing, and recovery, plus a React SPA frontend. **Owned the dispatcher, HTTP server, and React frontend** and led end-to-end debugging across the stack.
- **ACLN Search Engine (CIS 5550):** Designed and deployed a Java distributed search engine on **5 AWS EC2 nodes** (1 coordinator + 5 KVS workers + Flame MapReduce) integrating a robots.txt-aware polite crawler, MapReduce indexer (TF-IDF with Porter stemming), PageRank job, and an α TF-IDF + β PageRank weighted ranking webserver with PDF support via Apache Tika; **crawled 5,000+ pages across 250+ unique domains**.
- **OpenAlex Research Impact Prediction (CIS 5450):** Built a data science pipeline on **70K OpenAlex CS journal papers** (2014–2024) to predict age-normalized citation impact $\log(1 + \text{cit}/\text{yr})$; owned data pipeline, feature engineering, and modeling – redesigned the target and added year-stratified sampling to fix temporal leakage and bias. Final **weighted LightGBM + neural-network ensemble** achieved **RMSE 0.5505 / R² 0.4196** (vs 0.4083 baseline).
- **Autonomous Vehicle MPC Simulation (MEAM 5170):** Built an autonomous driving simulation stack in Python on a 6-DOF dynamic bicycle model with Drake/SNOPT receding-horizon MPC (15 s horizon), TTC-aware behavior planning, hysteresis-bounded multi-obstacle lane changes, and 4-way intersection scenarios under low-rate noisy perception.

SKILLS

Languages: Python, Java, C++, C, JavaScript, TypeScript, SQL, MATLAB

Frameworks & Libraries: React, Angular, Vite, Node.js, Express, PyTorch, scikit-learn, LightGBM, pandas, NumPy

Databases & Infra: PostgreSQL, MongoDB, Redis, Neo4j, AWS (RDS, EC2), Vercel, Docker, Git, Linux