

# Max Leblang

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## EDUCATION

University of Wisconsin - Madison

Bachelor of Science, Computer Engineering

GPA: 3.97/4.00

December 2025

## ENGINEERING EXPERIENCE

SmartMigrate

Madison, WI

Co-Founder

May 2025 – Present

- Launched smartmigrate.app, a full-stack application (Next.js/FastAPI) automating asylum form completion with AI-enabled PDF ingestion and multilingual support; deployed on Vercel to serve non-profit legal clinics
- Awarded Best Prototype and Demo at 2025 Transcend UW Competition
- Conducting market validation through interviews with immigration attorneys and experts to refine product-market fit

Delve

Madison, WI

Embedded Systems Engineering Intern

May – August 2025

- Developed bare-metal C drivers for UART-based RFID reader and SPI dual SD card system with concurrent read/write management, implementing peripheral power management battery-powered medical-grade application requirements
- Led the development and integration of production-grade firmware for an ESP32 wearable leveraging the LVGL graphics library, managing full product lifecycle from conception through building 50 units for client usability testing
- Engineered BLDC motor control firmware with closed-loop torque control and power supply architecture, collaborating across mechanical and industrial design teams to meet industrial-grade torque requirements

Optimal Ticketing

Madison, WI

Backend Software Engineer

January – May 2025

- Scaled integration app from prior internship to handle high throughput syncing of 10,000+ accounts in less than a minute
- Implemented a multithreaded service to maintain accurate, real-time pricing between production data and external APIs

Backend Software Engineering Intern

June – August 2024

- Designed and built a real-time ticket data integration app in Python that reduced transaction reconciliation time by 160 hours per month by syncing purchase and inventory data across multiple API endpoints
- Increased production data sync throughput by 80% by multithreading API calls, requiring extensive system-wide data validation and logging to ensure data reliability

Paperless Parts

Boston, MA

Computational Geometry Software Engineering Co-op

January - June 2023

- Automated detection of broken mesh faces in uploaded customer files and implemented geometric surface replacement using Python geometry APIs and HOOPS C++ geometry library, increasing customer's ability to finalize cost estimates by 7%
- Enabled the 4x increase in platform-wide file size ingestion capacity by refactoring C++ file conversion microservice from shared disk architecture to API-based file transfer

## RESEARCH EXPERIENCE

Wisconsin Embedded Systems and Computing Lab, UW-Madison

Madison, WI

Machine Learning Research Engineer

September 2023 – June 2024

- Designed a multi-headed CNN in TensorFlow that classified 4 distinct behaviors across 10 cows with an accuracy of 96%
- Led deep learning development for dairy cow health prediction research focusing on time-series behavior modeling and built scalable data preprocessing pipeline processing 61M data points with sliding-window segmentation

WISION Lab

Madison, WI

Computer Vision Research Engineer

September 2024 – May 2025

- Improved user adoption by developing comprehensive documentation and usability improvements for Visionsim, an open-source sensor emulation library used in computer vision benchmarking
- Supported refactoring of Python CLI workflows to improve clarity and reproducibility across research experiments

## PROJECTS

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### **Runaway Alarm, *Embedded Microprocessor System Design***

- Designing custom 2-layer PCB in Altium for self-balancing robotic alarm clock with IMU, dual DC motors, and RTC; implemented FreeRTOS firmware with task scheduling for sensor fusion, PID balance control, and SPI/I2C communication

### **MiniSpark, *Operating Systems***

- Built distributed data processing framework replicating Apache Spark's DAG execution and task scheduling in C
- Implemented intelligent thread pool scheduling for parallel execution with deadlock prevention

### **Boogie Bot, *Robotics***

- Architected real-time ROS2 system with 3 custom nodes (audio processing, choreography, motion control) to synchronize xArm movements with live music on Raspberry Pi, solving timing constraints for seamless beat-matched dancing
- Developed choreography node that converted BPM to servo commands and implemented minimum jerk trajectory interpolation for smooth, natural dance motion between poses

### **FPGA Knights Tour, *Digital System Design and Synthesis***

- Programmed and validated FPGA-based autonomous robot to solve Knight's Tour in real time using SystemVerilog
- Fully implemented the digital logic for UART and SPI protocols, PID motor control, and optimal traversal algorithm to the Knights Tour problem on a 5x5 board

## LEADERSHIP ROLES

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**Teen Leadership Program Coordinator, *Camp Kesem at UW-Madison***

**VP of Recruitment & VP of Social Events, *Delta Kappa Epsilon Fraternity***

## TECHNICAL SKILLS

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Python, C/C++, SystemVerilog, Git, Linux, TensorFlow, FreeRTOS, ROS2, I2C, SPI, Solidworks, Altium