

WILL GUFFEY

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SUMMARY

- Strong Python and C++ development experience in autonomous systems (low-latency path planning, computer vision, state machines), data processing, automated testing, cloud infrastructure, and AI.
- Comfortable and experienced in translating academic literature into software.
- 8 years of professional software development; 5 years included engineering management.
- Excellent at rapid prototyping and building strong cross-functional relationships.
- Deep Linux experience; comfortable with *nix systems in general.
- Problem solver with a passion for performance engineering and strong academic rigor.

EDUCATION

University of North Carolina at Chapel Hill

Chapel Hill, NC

BA Mathematics, BA Physics

Aug 2015 - May 2018

Finished all department classes in 5 semesters. Member of Carolina Math Club and Society of Physics Students.

WORK EXPERIENCE

Tenfour AI

Pasadena, CA

Co-founder / Chief Product Officer / Lead Software Engineer

Apr 2024 - Dec 2024

- **AI order taking system for restaurants:** A demo of an early version can be seen [here](#). Hands-on experience testing/fine-tuning models, working with data for model training, and designing low-latency and reliable agent-based workflows.
- **LLM agent design:** Designed agentic workflows using LangGraph and function calling to achieve multi-step conversations with guaranteed behavior.
- **Fast iteration cycles:** Built tools to evaluate model outputs across 1000s of test cases to enable fast iteration and regression protection for our speech-to-text and order prediction systems.

Miso Robotics

Pasadena, CA

Simulations Intern (May 2017) → Robotics Engineer (Jan 2018) → Senior Robotics Engineer (Jan 2020) →

Lead Robotics Engineer (Mar 2021) → Software Engineering Manager (Apr 2022 - Apr 2024)

- **Team leadership:** Led the robot movement team, which was responsible for all software related to moving our 7 DOF fryer cooking robot.
- **Robot behavior platform:** Enabled faster deployment of new robot behaviors by creating a modular behavior definition framework. Notable aspects of this framework were its well-defined configuration management and automated testing systems.
- **Motion planning:** Worked heavily on our path planning stack, including a custom implementation of trajopt (sequential convex optimization solver) for kinematics planning and an MPC layer for dynamics and trajectory smoothing.
- **Motion cache system:** Memory and database (SQL) based caching system. Also made cache management systems including cache invalidation and offline cache filling.
- **Data lake and observability platform:** Made significant contributions to our observability platform, including data lake architecture using AWS S3/Athena/Glue, writing ETLs, setting up dashboards/alerts on Grafana and led the team's adoption of them.
- **Academic research:** Led two collaborations between Miso Robotics and Caltech's AMBER lab (premier robotics research lab led by Prof. Aaron Ames).
- **Other highlights:** Computer vision performance engineering, extrinsic camera calibration routine, system identification, scheduling algorithms, custom state machines, and CI/CD architecture.

SKILLS

Programming: Python (advanced), C++23 (STL, templates, metaprogramming), JavaScript, SQL (schema definition, query writing/optimization), Bash, Rust

Frameworks/Tools: Docker, React, NextJS, LangChain, OpenCV, Pytest, Unittest, ROS, Gazebo, GitHub Actions, Jenkins, Grafana, Terraform, SQLAlchemy, Kubernetes, Ansible, PUMML, debuggers (pdb, gdb, Valgrind)

Cloud: AWS (Step Function state machines, Athena, S3, Glue, etc), GCP (Cloud Functions, Container Registry)

Leadership: Engineering management, cross-org alignment, project planning

Math/Eng: State machines, Optimization (modeling, using LP, QP, or nonlinear solvers), Model Predictive Control, Networking, Stats, translating research to production

PAPERS AND PATENTS (GOOGLE SCHOLAR)

Papers: Safety-critical manipulation for collision-free food preparation (**Finalist for Best Paper at IROS 2022**), Direct collocation for dynamic behaviors with nonprehensile contacts: Application to flipping burgers

Patents: Automated bin system for accepting food items in robotic kitchen workspace