Vinicius Dugue

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SUMMARY

AI software engineer with experience building end-to-end AI/ML and data workflows, natural language processing (NLP), training deep learning models, and completing research. Skilled at transforming complex data into actionable insights and deploying various machine learning models.

EDUCATION

B.S. in Computer Science | California State University-Long Beach **May 2025**

Relevant Course Work: Data Visualization | Database Design | Data Structures & Algorithms | Deep Learning | Linear Algebra | Machine Learning

Publications:

- Dugue, V., et al. "Vibrotactile Navigational Cues May Be Effective for Specific Urban Air Mobility Operations.", Aug 2025.
- Dugue, V., et al. "Evaluating Simple Vibrotactile Feedback for Manual Glideslope Landings in Urban Air Mobility Simulation.", Nov 2025.

EXPERIENCE

NASA-funded — VR Software Engineer **Nov. 2023 - Present**

San Jose State University Research Foundation

- Developed a **Unity**-based **UAM** drone simulation in the **CAVE VR** system to support research in human factors and virtual drone piloting over the San Francisco area
- Collaborated with interdisciplinary teams of pilots, researchers, and software engineers to test and refine flight simulation
- Integrated **ART Dtrack** for body tracking, created custom **C# data collection** tools, and a tactor-based **vibrational feedback system**
- Designed and implemented interactive **UI** elements including a Vertical Situation Display (VSD)

RxSight — Data Engineer Intern **Nov. 2025 - Feb. 2026**

Aliso Viejo, CA

- Collaborated across ML and software teams in an **agile** cross-functional workflow to complete **verification/validation** of data processing **ETL pipelines** and medical device software
- Developed and maintained a **SQLite database** using **Python** and **SQL** to manage large-scale eye image datasets and allow for SQL querying
- Performed **feature engineering** on images to extract clinically relevant information and enable analysis of **LAL** (Light Adjustable Lens) implants
- Designed a **cybersecurity threat model** for a medical device using the **Microsoft Threat Modeling Tool**, writing justifications for potential **STRIDE threats** across both software and hardware attack surfaces

PROJECTS

AI Climb Generator | Presented at **2024 IEEE DSAA** **Jan. 2024 - Oct. 2024**

- Designed and trained a Multi-Task Learning **LSTM** model to generate climbing routes for Kilter Board LED-lit climbing walls using **PyTorch**
- Built a preprocessing pipeline (**Pandas, NumPy, SciPy**) to process database of **100,000+** user-generated climbs, transforming route data into GPU-optimized tensors for **CUDA**-accelerated training
- Accepted and presented at the **2024 IEEE DSAA** Machine Learning and Data Science Conference

Dynamic Digital Agents (C#, FastAPI, PydanticAI) | Senior Project **Aug. 2024 - May 2025**

- Built an AI-driven **Unity** survival simulation with autonomous, **LLM**-powered agents which use **RAG** and **prompt chains** for contextual reasoning and real-time decision making
- Architected a **FastAPI** backend to serve low-latency LLM inference requests via **OpenRouter**, using **PydanticAI** for structured LLM **I/O** and **Postman** for API validation and integration testing across **RESTful endpoints,** with a focus on **CI/CD**- ready backend workflows
- Won the **CSULB "Best Use of AI" Award 2025** while competing against **200+ students** from all engineering disciplines

Climb Generator Website | Independent Project **May 2025 – Present**

- Built a **full-stack web app** platform ("Kilter AI") that lets users generate, view, and save custom climbing routes
- Designed and iterated **frontend UI/UX** with **React +Tailwind CSS**
- Engineered a **FastAPI backend** deployed on **Google Cloud Run** to handle route generation requests, with **Firebase** managing **OAuth** user authentication, email verification, metadata and **JSON database schemas** via RESTful endpoints

TECHNICAL SKILLS

Languages: Python | SQL | C#/.Net |C++ | C | Java | JavaScript | React

ML/Data: PyTorch | Tensorflow | Pandas | Scipy | NumPy | MCP | OpenAPI | NLP

Databases/Cloud: Firebase | MongoDB | AWS | Google Cloud | PostgreSQL

Tools: Git | Docker | Kubernetes | Linux | pgAdmin | Claude Code | Tableau | Power BI| CMake | Unity