David M. Plehn

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PROFESSIONAL SUMMARY

AI/ML-focused Computer Science and Quantitative Economics student at UC Irvine with hands-on experience building large language models, training and evaluating multimodal AI systems, contributing to peer-reviewed research, and working in Agile/Scrum environments. Combines a strong quantitative foundation with practical full-stack and systems engineering experience across defense and academic settings.

EDUCATION

University of California, Irvine — Irvine, CA

B.S. in Computer Science (Intelligent Systems) ; B.A. in Quantitative Economics ; Minor in Statistics — *June 2029*

Relevant Coursework: Data Structures, Statistics, Linear Algebra, Differential Equations, Artificial Intelligence, Large Language Models, Agile Development

SKILLS

Frameworks: PyTorch, TensorFlow/Keras, Scikit-Learn, Flutter, Vue.js, React Native

Languages: Python, Java, C++, SQL, PostgreSQL, TypeScript/JavaScript, HTML/CSS, Dart, C#, LabVIEW, R, MIPS Assembly, SysML, Ansible

Libraries: Pandas, NumPy, Matplotlib, sqlite3, python-gitlab, Zustand, ExpoGo, pywin32

Developer Tools: Git, Google Colab, Jupyter Notebook, Visual Studio, PyCharm, IntelliJ, Firebase, FlutterFlow, AutoCAD, SonarQube, Microsoft Office, CATIA Magic/Cameo, Docker, Podman, ContainerLab

EXPERIENCE

Research Assistant — Oct. 2026 – Present

Bayesian Cognitive Modeling Lab (Prof. Michael D. Lee), UC Irvine — *Irvine, CA*

- Building a Bayesian Rasch (ability/difficulty) latent-truth model in JAGS to improve wisdom-of-the-crowd aggregation. The model weights individual judgments by each person's inferred expertise, using the Bennett, Benjamin, Mistry & Steyvers (2018) dataset.
- Extending the model from a single holistic expertise parameter to per-topic ability and difficulty parameters, so it can represent multidimensional expertise across knowledge domains.
- Surveying datasets in the lab's behavioral data repository to determine how existing cognitive models must be adapted to capture domain-specific expertise.

Research Assistant — Oct. 2026 – Present

Learning and Decision Neuroscience Lab (Prof. Mimi Liljeholm), UC Irvine — *Irvine, CA*

- Combining two lines of work into a deep reinforcement learning project. The first is the neural model of observational learning in Liljeholm, Molloy & O'Doherty (2012, J Neurosci). The second is the imitation-based social conformity model in Mauter & Liljeholm (2026, Brain and Behavior).
- Implementing observational Q-learning agents to compare imitation (copying actions) with emulation (inferring others' goals) as mechanisms of social learning.
- Training RL agents in MiniGrid environments to test instrumental control (outcome divergence) as an intrinsic reward surrogate, as part of the lab's Agentic AI Experiment.

Systems & Software Engineer Intern — June 2026 – Present

Lockheed Martin — *Colorado Springs, CO*

- Designed and deployed an enterprise-wide Retrieval-Augmented Generation (RAG) AI chatbot for the C2BMC program, enabling semantic search and real-time knowledge retrieval across disparate command media, technical manuals, and operational documentation.
- Automated Cameo model-based systems engineering projects, Ansible playbooks, and Python scripts interfacing with deeply complex and large-scale network systems to enhance efficiency and reliability.
- Integrated AI tooling hosted on AWS Bedrock through GitLab CI/CD pipelines to leverage Lockheed's knowledgebase during coding and accelerate development workflows across mission-critical systems, decreasing software creation time by over 50%.
- Troubleshot field-deployment issues to ensure seamless integration with legacy and modern infrastructure across equipment from manufacturers including Juniper, Cisco, and Fortinet.
- Built a virtualized network development environment through ContainerLab via Docker/Podman containerization of manufacturer Virtual Machine (VM) images on ESXi RHEL machines.

Artificial Intelligence Trainer Nov. 2025 – Present
Handshake AI *Irvine, CA*

- Trained and evaluated multimodal AI systems across text, audio, and visual inputs to increase response quality as well as increasing cross-modal accuracy by ~15%.
- Developed and tested domain-specific prompts to benchmark large language model performance in scientific and technical subjects.
- Built detailed scoring rubrics to evaluate AI model outputs, increasing precision and consistency of evaluations across multiple AI labs.
- Designed AutoCAD Mechanical training data to improve AI model accuracy and professional CAD workflow performance through the creation of multiple weeklong projects for evaluation.

Research Assistant Oct. 2024 – July 2025
University of Denver *Denver, CO*

- Developed LabVIEW programs for precise control of sensitive measurement equipment in an active physics research environment.
- Collaborated on AutoCAD designs to build custom tools enhancing lab measurement capabilities and reducing manual oversight by ~90%.
- Fabricated and validated ~10nm thin-film devices using vacuum sputtering, lithography, and a multitude of fabrication techniques for research towards developing state-of-the-art MRAM technology.

PROJECTS

GPT Model from Scratch Jan. 2026 – Present
PyTorch, Python, NumPy, Pandas | https://github.com/Plehndm/LLM_From_Scratch

- Designed a multi-head attention transformer architecture modeled after GPT, implementing core LLM logic from first principles.
- Implemented PyTorch CUDA architecture through a WSL2 virtual environment to leverage NVIDIA GPUs compute for enhanced .LLM training.
- Applied Byte-Pair Encoding to build the tokenizer and fine-tune NLP embeddings for initial vocabulary.
- Performed output fine-tuning using an RLHF methodology.

SceneCheck March 2026 – June 2026
TypeScript, Supabase, JavaScript, HTML, PostgreSQL, Zustand, ExpoGo | https://github.com/Plehndm/SceneCheck-App

- Built a cross-platform web and mobile application enabling users to find, join, and create events.
- Created a recommendation algorithm to match events to users based on stated interests.
- Integrated Supabase for backend services, authentication, data storage, and PostgreSQL implementations.
- Deployed Android, iOS, and web versions using ExpoGo.

Co-Author, Peer-Reviewed Paper: "Field-like torque measured via a Wheatstone bridge" Jan. 2025 – Sept. 2025
Journal of Applied Physics | *https://doi.org/10.1063/5.0300521*

- Designed an optimized Wheatstone bridge geometry that improved signal sensitivity for measuring field-like spin-orbit torque, enabling the creation of reliable SOT-MRAM and superior process control.
- Enabled in-situ calibration of measurement devices, reducing experimental complexity while improving accuracy.

AWARDS & HONORS

- Eagle Scout, Boy Scouts of America • 2nd Place in Lockheed Martin CodeQuest Competition • 1st Degree Black Belt, Karate
- 1st Place, Lockheed Martin MIC2 Intern Project Competition