William M. Klein

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Professional Summary

Analog and mixed-signal engineer with 18 years of experience, from analog design support to direct analog and AMS design, now applying AI and machine learning to engineering problems. During a career sabbatical living aboard a sailboat in the Caribbean, I kept my engineering skills sharp through hands-on work on complex marine electrical systems, power management, and system troubleshooting, while building proficiency in Python and AI/ML. I then completed UT Austin's Post Graduate Program in AI & Machine Learning while working in retail and as a scuba instructor, adding skills in predictive modeling, neural networks, computer vision, and generative AI. I bring seasoned analog expertise together with practical AI capabilities, including a circuit-simulation agent I built, to forward-thinking engineering teams.

Projects

spice-agent | 2026 | Personal Project: AI agent for circuit simulation

- Built an AI agent that runs ngspice circuit simulations from Python (PySpice), giving an LLM tool access to a real SPICE simulator
- Exposed the simulator through an MCP (Model Context Protocol) server so MCP-compatible agents can run simulations
- Compared local Ollama models with Google Gemini for tool-calling reliability and hardware limits, and chose Gemini to run the agent
- Developed on Linux with VS Code; published on GitHub under an MIT license with a README

Work Experience

Scubaland | 2025 – 2026 | Retail Sales Associate & Scuba Instructor

- Taught scuba certification courses and advised retail customers on dive equipment selection
- Helped set up and customize a new CRM system for customer and sales tracking

Exar Corporation | 2015 – 2017 | Analog Design Consultant (Independent Contractor)

- Utilized Cadence Virtuoso for analog implementation of a DAC
- Performed advanced circuit simulation using Spectre simulator
- Delivered comprehensive design solutions using integrated analog design flow

Exar Corporation | 2013 – 2015 | Staff Engineer, Project Lead

- Led a cross-functional collaboration of 12 engineers for Mixed-Signal Design projects, including a Sensor Interface AFE, using Cadence AMS Designer
- Collaborated with other teams to meet physical design challenges
- Implemented rigorous DRC/LVS verification procedures and ran post RC extraction simulations for physical design sign-off
- Mentored team members in advanced use of EDA tools

Cadeka | 2008 – 2013 | Analog and Physical Design Consultant (Independent Contractor)

- Executed op-amp process transfers using Cadence Virtuoso and Silvaco Gateway
- Performed comprehensive circuit simulation and verification using Spectre and SmartSpice
- Implemented physical designs of analog circuits with Virtuoso Layout Suite XL and Silvaco Expert
- Ensured design integrity through thorough DRC/LVS and RC extraction

Silvaco | 2006 – 2010 | Senior Applications Engineer

- Provided expert-level support for Silvaco Gateway, SmartSpice, and SmartView CAD tools
- Collaborated with cross-functional teams to resolve complex CAD flow challenges
- Ran tool demonstrations for potential customers
- As a tool vendor, trained customers in optimal use of Silvaco's simulation and analysis tools
- Created technical documentation and training materials for Silvaco design tools
- Collaborated with R&D team to enhance tool capabilities based on customer feedback
- Developed and maintained the first Silvaco Process Design Kits (PDKs) for various process nodes. Our work formed the basis of Silvaco's current PDK group.
- Enabled new technology node adoption through PDK development, validation, and installation

Northrup Grumman Corp | 2003 – 2005 | Test Engineer

- Updated test code for F-15 fighter jets using ATLAS programming

Sony Semiconductor | 2000 – 2003 | Foundry Technical Representative

- Utilized Cadence tools for physical design verification
- Supported customers in implementing foundry-specific design rules
- Provided technical guidance for process-specific design considerations
- Provided comprehensive PDK support and maintenance for foundry customers, including help with PDK installations
- Resolved PDK-related technical issues and implemented improvements
- Worked with sales team to provide technical support on sales calls

TRW | 1999 – 2000 | Test Engineer

- Designed interface units to automate testing of both analog and digital VOR/ILS/Glideslope units from USAF AWACS jets
- Wrote Test Basic code to run the required tests

Technical Expertise

- **EDA Tools**
  - Cadence Suite: Virtuoso Schematic Editor, Virtuoso Layout Suite XL, Spectre, AMS Designer
  - Silvaco Suite: Gateway Schematic Editor, SmartSpice, SmartView, Expert Layout, SmartDRC/LVS
  - Open-source simulation: ngspice, PySpice
  - Physical Design Verification: DRC, LVS, RC extraction, parasitic extraction, signoff flows
  - Coding/Scripting/OS: Python, C++, Verilog, TCL, Windows, Linux
  - AI/Machine Learning: Python (pandas, NumPy, scikit-learn, XGBoost), TensorFlow/Keras, CNNs and transfer learning, generative AI/LLMs, retrieval-augmented generation (RAG), AI agents and tool calling, MCP (Model Context Protocol), prompt engineering, NLP, Google Colab, Docker, Hugging Face
- **CAD Methodologies:** Physical design implementation, CAD flow development, design productivity optimization
- **Domain Knowledge**

- Semiconductor Design & Simulation
- Analog/Mixed Signal Design
- Physical Design Implementation
- Customer Technical Support
- Team Leadership
- Technical Sales Support
- PDK Development and Support

Education

BSEE 1999 | University of Texas San Antonio

Post Graduate Program in AI & Machine Learning 2026 | University of Texas at Austin, McCombs

- **Coursework:** ML, neural networks, computer vision, NLP, generative AI, RAG, deployment
- **Predictive maintenance:** Predicted wind turbine generator failures from sensor data (~86.5% recall)
- **Generative AI:** Built a RAG-based LLM medical assistant that answers clinical questions from medical manuals
- **Computer vision:** Fine-tuned a VGG16 CNN to detect hard hat compliance in site images