Thomas Hinano Keller

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Summary

AI Research Engineer specializing in machine learning, foundation models, and scalable AI solutions for digital pathology and medical imaging. Expertise in cloud-based ML pipelines, vector DB, and high-performance computing, with experience in Kubernetes, Oracle Cloud, and automated workflows. Skilled in Python, SQL, and C, with a proven track record in developing and deploying AI-driven solutions for complex environments. Passionate about advancing AI innovation to solve real-world challenges in healthcare and beyond.

Work Experience

AI Research Engineer – Digital Pathology
Ellison Medical Institute, Los Angeles — Oct 2024 - present

- Engineered AI pipelines for pathology and computer vision, leveraging foundation models to extract high-dimensional embeddings for vector-based ML. Integrated Kubernetes, Oracle Cloud, and automated workflows for scalability, performance, and reliability.
- Applied UMAPs and PCA techniques for dimensionality reduction, enabling high-resolution visualization and interpretation of complex pathology data to enhance model explainability, feature analysis, and predictive accuracy.
- Integrated vector databases with SQL, Python, and APIs to streamline pipeline development and optimize production workflows.

Data Scientist – Medical Imaging AI Research
SDSU Medical Imaging AI Lab, San Diego — Jan 2024 - Sep 2024

- Development of a 3D algorithm aimed at characterizing COPD (Chronic Obstructive Pulmonary Disease) based on CT-images, overseeing all phases from initial setup to model training to fine-tuning and comprehensive evaluation.
- Employed boosting for imbalanced datasets using Python, Keras, and TensorFlow. Integrated a multi-loss function model, conducted iterative testing, data augmentation, and tuning, resulting in a 15% increase in predictive accuracy.

Graduate Assistant – High Performance Computational Lab
Computational Science Research Center CSRC, San Diego — Nov 2022 - Dec 2023

- Set up and supported an HPC cluster for seamless performance and reliability for 30+ scientists conducting research and analytics.
- Enhanced cluster environment functionality on Linux, Windows, and macOS by developing and delivering customized training sessions; increased user productivity and efficiency by 40% through consulting, support, and troubleshooting.

Software Engineer – Intern
IT'IS Foundation, Zürich — Mar 2022 - Aug 2022

- Automated measurement and testing, optimizing return loss via a vector network analyzer. Built a GUI, cutting test time by 30%.
- Software development of a Python-driven solution for efficient calibration certificate creation, integrating data parsing, LaTeX templates, and automation; resulted in a 25% decrease in time and certificate failure rates.

Founder, CEO
Artigall GmbH, Zürich — Jun 2019 - Aug 2022

- Led development and strategy of a web application, engaging 30 artists and increasing artwork visibility and user engagement by 50%.
- Managed a cross-functional team of five members in product, engineering, sales, and support, coordinating with six business partners, and executed project management that culminated in the successful launch of an e-commerce platform.

Skills Summary

- **Programming Languages:** Python, C, SQL, Fortran, Assembly, MATLAB, HTML, CSS, Bash, VHDL
- **Frameworks:** Pandas, NumPy, Matplotlib, scikit-learn, TensorFlow, PyTorch, Keras, Django, Tkinter, Pthread
- **Tools & Systems:** Linux**,** GitHub, SQLite, LaTeX, KiCad, OpenMP, MPI, CUDA, PBS/Torque,
- **AI & Cloud:** Machine Learning, Foundation Models, Generative AI, Deep Learning, Kubernetes, Docker, Oracle Cloud, AWS, Vector DB

Education Summary

Master of Science - Computational Science, concentration in Data Science — Aug 2022 - Dec 2023
San Diego State University SDSU, California, USA

Bachelor of Science - Electrical Engineering and Information Technology — Feb 2017 - Sep 2021
University of Applied Sciences and Arts Northwestern Switzerland FHNW, Switzerland

Academic Projects

- **Master Thesis:** Conducted research on GAN and U-Net architectures for predicting air-trapping and emphysema from CT scans, deploying models with 80% accuracy in expiratory prediction from inspiratory CT for advancing COPD staging (2023).
- **Parallel Learning with Deep Neural Network:** Designed a deep neural network from scratch, parallelizing learning with OpenMP, CUDA, and PBS/Torque; reached 98% classification accuracy and increased computational speed by 41% (2023).
- **Personal Blog:** Created a feature-rich personal blog built with Python and Django, including an SQL powered commenting system; deployed on AWS EC2, highlighting advanced cloud and server management capabilities (2023).

Publications

- **Patent pending:** Circuit for reducing the power consumption of an idling battery charger.
- T. Keller. "*Mimetic Differences for the Perona-Malik Equation*." Poster presented at the CSRC, San Diego, April 2023.
- T. Keller. "*Mimetic Differences for the Perona-Malik Equation" CSRC*, 07/2023, CSRCR2023-06.