Christos Vasileiou

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Professional Experience

Pathfinding Test Development   May 2022 - August 2022
Intel Corp.

– Detecting and exposing manufacturing defects in the Integrated Circuits (ICs) using Machine Learning & Statistical Analysis.
– Developed Machine Learning methods to identify equivalence relationships between them and thereby reducing the overall number of locations to be targeted for test stimuli.

Asynchronous Hardware Designer   June 2018 - September 2018
Circuit And Systems Laboratory

– Working on the project "Asynchronous Blade/Sharp (Resilient) Implementation on FPGA" as an intern at the CAS (Circuits and Systems) Lab, one of the ECE Department's R&D Laboratories mentored by Dr. Christos Sotiriou.
– A project related to clockless control circuit implementation of a resilient circuit, capable of detecting Flip-Flop setup errors and mitigating the timing.
– Received the Sterling medal (1st place in 2018 internships).

Education

PhD in **Applied Machine Learning in Hardware Testing**   Jan 2021 - Dec 2025
University of Texas at Dallas

Master's in **Computer Engineering**   Jan 2021 - May 2023
University of Texas at Dallas

Integrated Master's (B.S. & M.S.) in **Computer Engineering**   Sep 2014 - Aug 2020
University of Thessaly at Volos, Greece

Qualifications

1. Expertise with applied **Machine Learning** & **Deep Learning** on **3D/2D Computer Vision**, Radar Imaging, Hardware Testing
2. Well-experienced with **Transformers**, **(Deep) Reinforcement Learning**, Data Visualization
3. **Great** comprehension of **Generative AI**, Large Language Models (**LLMs**), Generative Adversarial Networks (**GANs**), Diffusion Models, Graph Attention Networks (**GATs**),
4. **Hands-on** experience on Version Control Systems (**VCS**), Testing and Code Review
5. Development experience on projects related to High-Performance Computing (**HPC**), Deep Learning Model **Optimization** and **Distributed Systems**

Hard Skills

Languages: Python, C/C++, Java, R, Matlab

Frameworks: Pytorch, Tensorflow, OpenCV, scikit-learn, Adaptive-Experimentation-Platform (Ax-platform)

Tools: Git/Github, PyCharm, Google Colab, Jupyter Notebook

Scripting: Bash, Python

Soft Skills

- Emphasis on problem-solving abilities, effective communication skills, and a collaborative mindset.

- Ability to work in a team environment, demonstrating adaptability and a willingness to learn.

- Curious, self-motivated, and excited about solving open-ended challenges

Projects

Generative AI-models for Hardware Testing **(LLMs, Reinforcement Learning)**   September 2023 - Present
- Developed Generative AI methods for Digital and Analog Integrated Circuits Hardware Testing, utilizing **Graph Attention Networks (GNNs/GATs)** and Transformers-based Models, such as **Large Language Models (LLMs)**

- Mentored by Dr. Yiorgos Makris.

Provenance Attestation **(scikit-learn, GAN, PyTorch)**   September 2021 - Present
- Development of provenance attestation methods for Integrated Circuits, evaluating **trustworthiness** of the masks and tools used during the fabrication process.
- Synthetic Data Generation for enhancing the IC data distribution, based on Deep Learning with Generative Adversarial Networks (**GANs**).
- Mentored by Dr. Yiorgos Makris.

Machine Learning in THz imagers **(GAN, PyTorch, Ax-Platform)**   January 2021 - August 2022
- A Texas Instruments' project for static and dynamic hand gesture classification using **mmWave radars** and **deep convolutional neural networks**.
- Generation of clean synthetic data by post-processing distorted data from super-resolution imaging techniques, using Generative Adversarial Networks (**GANs**).
- Mentored by Dr. Yiorgos Makris and Dr. Murat Torlak.

Hardware-Acceleration for Fire Detection **(C/C++, Tensorflow, Edge-TPU)**   August 2019 - August 2020
- A **Deep Convolutional Neural Network** architecture integrated into an Embedded System board.
- Design and implementation of You-Only-Look-Once object detection algorithm running on a Google Coral-Dev board using Tensorflow Lite framework for forestland fire detection.
- The architecture runs on the Edge-TPU of the Coral-Dev Board, after converting the precision of float numbers to quantized, thereby leveraging the Edge-TPU acceleration.
- Advised by Dr. Nikolaos Bellas.

Publications

Efficient CNN-Based Super Resolution Algorithms for Mmwave Mobile Radar Imaging   **ICIP '22**
- An innovative super resolution approach to emerging modes of near-field synthetic aperture radar (SAR) imaging.
- Developed a Generative Adversarial Network (GAN) by removing distortion and enhancing clarity, shape & texture of data by 50% compared to SOTA techniques while reducing time consumption by ∼1000x.
- Developed for embedded systems and mobile devices reducing by 90% number of parameters while enhancing the performance.