

Reego John-Annaselvan

Computer Science / Modeling / Machine learning

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A / EDUCATION

Georgia Institute of Technology / BS Computer Science / Graduation Spring 2027 / **GPA 3.54** / Threads: Modeling & Simulation; Intelligence / **The College of New Jersey** / First-year Study

B / RESEARCH _ EXPERIENCE

Compound Semiconductor Products VIP

Subteam Lead / Georgia Tech / Dr. William Hunt
Advisor: bill.hunt@ece.gatech.edu

Atomistic-to-electronic modeling of GaN to investigate the physical mechanism of neutron detection

- Lead the simulation subteam within Georgia Tech's VIP partnership with Sandia National Laboratories.
- Developing a workflow linking GaN molecular-dynamics trajectories to Quantum ESPRESSO calculations of electronic response.
- Current scope: controlled lattice disturbances, atomic-snapshot conversion, and work-function analysis with numerical convergence checks.

Stopping criteria for active learning

The College of New Jersey / Dr. Michael Bloodgood
Advisor: mbloodgood@tcnj.edu

Research on active-learning stopping criteria that balance annotation cost and predictive performance

- Implemented comparative experiments for active-learning stopping criteria; analyzed annotation cost against predictive performance.
- Built reproducible evaluation scripts to track learning curves, stopping decisions, and variation across experimental runs.

Nano PV Solar

Internship experience / Three years
Company contact: info@nano-pv.com

Computational characterization of photovoltaic device performance

- Developed a Python analysis framework for current-voltage characterization, extracting device parameters and comparing measured response with fitted models.
- Evaluated parameter sensitivity and measurement variability across test conditions to distinguish device trends from testing artifacts.

RESEARCH + PROJECT TECHNOLOGIES

Research workflow: Molecular dynamics / DFT / Quantum ESPRESSO

Planned ML stack: Python / PyTorch / JAX / scikit-learn

Planned systems stack: C++ / CUDA / OpenGL / Linux / Git / CMake

C / PERSONAL PROJECTS

Last Label / When should learning stop?

Python / small-text / scikit-learn / Personal

Benchmarking the reliability of active-learning stopping rules under label noise and sampling bias

- Reproduce prediction-stability stopping rules; evaluate sensitivity to label noise, class imbalance, and biased stop sets.
- Measure premature stopping and excess labeling through repeated trials, ablations, and reproducible experiments.

SENSORLAB / Learning where to measure

Python / JAX / SciPy / Personal

Simulation-guided sensor placement for estimating thermal properties from sparse, noisy measurements

- Develop a differentiable heat solver for material-parameter inference; verify gradients against finite differences.
- Compare adaptive, uniform, and random sensor layouts using parameter error, uncertainty, and identifiability.

LUMEN / CPU and GPU path tracer

C++ / CUDA / OpenGL / Planned

CPU/GPU path tracing for physically based lighting simulation

- Implement BVH traversal and multiple importance sampling; extend a CPU reference tracer to a GPU wavefront pipeline.
- Benchmark image error, throughput, and memory across scenes; verify convergence and CPU/GPU consistency.

RESEARCH INTERESTS

Data-efficient learning / Scientific computing / Simulation and inference