Alex Saad-Falcon

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Education

Georgia Institute of Technology — Atlanta, GA
PhD in Machine Learning — Aug 2020–Present

- Focus in computer vision, generative models, and high performance computing

Georgia Institute of Technology — Atlanta, GA
M.S. in Electrical Engineering, GPA: 4.0/4.0 — Jan 2018–Dec 2018

- Concentration in digital signal processing with a graduate research assistantship

Georgia Institute of Technology — Atlanta, GA
B.S. in Electrical Engineering, GPA: 4.0/4.0 — Aug 2014–Dec 2017

- Undergraduate research in optics and machine learning for music generation

Experience

Georgia Tech Research Institute — Atlanta, GA
Research Engineer at the Advanced Concepts Lab — Jan 2019–Present

- Lead software architect on a $22m project, managing from hardware drivers to UI
- Proposed a generative machine learning project and received $65k in funding for two years
- Performed on two projects using an RF system on a chip for analog/digital beamforming
- Simulated, created, and tested an electrically small antenna on a DoD contract

XONE Technology — Santa Clara, CA
Signal Processing Systems Engineer — Apr 2018–Aug 2018

- Developed in VHDL and MATLAB for a product that uses Wi-Fi for location tracking
- Ideated and created a new system UI feature for directional antenna readings
- Coded a C++ serial device driver for an attitude and heading reference system
- Marketed product directly to a potential end user: the local police department

Georgia Tech Research Institute — Atlanta, GA
Graduate Research Assistant at the Advanced Concepts Lab — Jan 2018–Dec 2018

- Created code in C++/Python to analyze molecule-molecule electrodynamic interactions
- Migrated code from serial to parallel computation on GPU for 1000x speedup
- Automated setup and dispatch of molecular dynamics simulations on a cluster
- Earned Graduate Research Assistant Award as 1 out of 200 students

Publications

1. K. Allen, W. Hunt, J. Andreasen, J. Farnum, **A. Saad-Falcon**, *et al.*, "Rigorous Approach to Simulate Electromagnetic Interactions in Biological Systems," *NAECON 2018 - IEEE National Aerospace and Electronics Conference*, Dayton, OH, 2018, pp. 491-495, doi: 10.1109/NAECON.2018.8556724.

Projects

See more on my **website** and **GitHub**

- **VaseGen** (Python, 2020)
  Using GANs to reconstruct ancient vases
- **Witness Protection** (Python, 2018)
  Applying face swap to protect witnesses in a live video
- **BinBot** (Python, 2020, private)
  Trading algorithm backtesting and paper/live deployment
- **MATLAB Particles** (MATLAB, 2014)
  Particle simulation under different force fields

Skills

- **Programming:** Python, MATLAB, C/C++, Java
- **AI/ML:** PyTorch, TensorFlow, Keras, Pandas
- **Tools/Techs:** Git, CI/CD, Kubernetes, LaTeX
- **Web:** HTML/CSS, JavaScript, Flask

Human Languages

- **English:** Native
- **Spanish:** Bilingual

Scholarships & Awards

- Molecular Generation with Machine Learning (MOLGEN) - $65k in internal research funding 2019–2021
- Graduate Research Assistant Award - given to 1 out of 200 research assistants 2018
- **FinTech Hackathon** Runner-Up - wireless close-range secure payment system 2017
- **HackGSU Hackathon** Finalist - virtual drumset using augmented reality and microcontrollers 2017
- **Stamps President's Scholarship** - 50 selected from freshman class of 8560 (0.58% acceptance rate) 2014–2018

Mentorship & Teaching

- Freelance Private Tutoring Jun 2020–Present
  Run private tutoring agency with two tutors and up to eight concurrent students
- Molecular Dynamics/Simulink Co-op Manager at the Georgia Tech Research Institute May 2020–Present
  Direct co-ops in molecular dynamics simulations and creating Simulink circuit models
- New Hire Buddy Program at the Georgia Tech Research Institute Apr 2020–Present
  Provide guidance for new hires the first several months of work
- MOLGEN Co-op Manager at the Georgia Tech Research Institute Jan 2020–Present
  Developed an ML crash course for a co-op and jointly created a codebase and paper
- **Stamps President's Scholarship** Freshman Hosting and Mentoring Feb 2015–Mar 2017
  Hosted 1-2 scholarship candidates every year and mentored through first years at Georgia Tech
- **Circuit Analysis** Teaching Assistant at Georgia Tech Jan 2015–Dec 2016
  Served as a lab TA to help students understand lab objectives and debug circuits