

Aaron Smull

Los Angeles, CA

Education

Master of Arts, Physics

UC Berkeley, Berkeley, CA

GPA: 3.856

Fall 2019

Master of Science, Electrical Engineering

Colorado State University, Fort Collins, CO

GPA: 3.989

Summer 2017

Bachelor of Science, Electrical Engineering, magna cum laude, honors scholar

Minor: Physics

Colorado State University, Fort Collins, CO

Spring 2015

Skills

- Python, Java, C, MATLAB and Fortran Programming.
- Modern deep learning and reinforcement learning algorithms for computer vision, TensorFlow.
- Algorithm validation and prototyping.
- SQL and relational database systems.
- High performance parallel computing with MPI and OpenMP.
- Web development with Django.
- Developing and debugging automated test solutions.
- Experimental quantum computing and quantum simulation research.
- Electronic design, automated test, and manufacturing.
- Ability to work across multi-disciplinary teams over many levels of product integration.

Work Experience

Avionics Test Engineer, SpaceX

October 2019-Present

- Developed software in Python for test automation as part of company-wide test framework.
- Designing test setups and measurement sequences to efficiently provide information on and automate detection of manufacturing defects.
- Designing and integrating automated test solutions with Python for mission-critical avionics and sensor hardware, including signal processing techniques for filtering high-speed telemetry.
- Building visualization tools for test measurement data sets to enable fast diagnoses of production problems.
- Specialized in testing radio frequency devices for communication and vehicle navigation.

Ultracold Atomic Physics Group, UC Berkeley

August 2017-August 2019

- Constructing apparatus for quantum control of ultracold molecules, with applications as platforms for quantum simulation and quantum computation.
- Electrical design of low noise electronics for signal filtering and processing in optical systems.

Summer Research Intern

June 2016-August 2016

Massachusetts Institute of Technology Lincoln Laboratory - Lexington, MA

- Tactical Defense Systems Group 108: Developing software-based signal processing techniques for target identification and tracking in phased-array radar systems.

Electromagnetics Group, Colorado State University

June 2014-August 2017

Advisor: Dr. Branislav Notaros, Professor of Electrical and Computer Engineering

- Development and parallelization of numerical methods for improved-accuracy electromagnetic scattering simulations using higher-order finite element methods.

- Development of fast parallel direct solvers for high-frequency scattering applications in method of moments code (MoM) utilizing hierarchical matrix compression and factorization techniques.
- Modeling and frequency domain simulation of stripline interconnect structures for generation of stochastic macromodels.

Assembly Technician Intern

December 2012-August 2013

Wolf Robotics, LLC. - Fort Collins, CO

- Assembled and troubleshot robotics systems for industrial automation, manufacturing, and welding applications.

Journal Publications

- A. Manic, A. Smull, F.-H. Rouet, X. S. Li, B. M. Notaroš, “Efficient Scalable Parallel Higher Order Direct MoM-SIE Method with Hierarchically Semiseparable Structures for 3D Scattering,” *IEEE Transactions on Antennas and Propagation*, 2017
- A. P. Smull, A. B. Manic, S. B. Manic, B. M. Notaroš, “Anisotropic Locally Conformal Perfectly Matched Layer for Higher Order Curvilinear Finite-Element Modeling,” *IEEE Transactions on Antennas and Propagation*, 2017
- F. Fang, S. Wu, A. Smull, J. A. Isaacs, Y. Wang, C. H. Green, D. M. Stamper-Kurn, “Cross-dimensional relaxation of ^7Li - ^{87}Rb atomic gas mixtures in a spherical-quadrupole magnetic trap,” *Physical Review A*, 2020
- C. Key, A. P. Smull, D. Estep, T. Bulter, and B. M. Notaroš., “A Posteriori Error Estimation and Adaptive Discretization Refinement Using Adjoint Methods in CEM: A Study with a One-Dimensional Higher-Order FEM Scattering Example,” *IEEE Transactions on Antennas and Propagation*, 2020
- F. Fang, J. A. Isaacs, A. Smull, et. Al, “Collisional spin transfer in an atomic heteronuclear spinor Bose gas, pending final publication 2020, preprint at <https://arxiv.org/pdf/2004.05663.pdf>