

# Cameron Allen

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camallen.net

I study the computations that enable intelligence, and I look for ways to improve the intelligence of machines so they can more effectively provide safe, ethical guidance and service to humans.

Brown University  
Ph.D. Computer Science  
Aug 2016 - Present

Duke University  
Ph.D. Computer Science – Transferred  
Aug 2015 - Jul 2016

Tufts University  
B.S. Electrical Engineering, *Summa Cum Laude*  
Sep 2007 - May 2011

## Projects

Mean Actor Critic – (Conference paper, in submission)

- Introduced a new family of policy-gradient algorithms for reinforcement learning that compute the policy-weighted sum over all Q-values at each state in a given training batch, rather than using the Q-values of just the sampled actions
- Proved that this approach reduces variance relative to traditional actor-critic methods
- Showed empirical results on two control domains and five Atari games, where Mean Actor Critic is competitive with (or better than) other state-of-the-art policy gradient methods

Memristor Simulator – Capstone project

- Wrote an open-source modification of the SPICE circuit simulator that enables modeling of memristor circuit components and which has been downloaded hundreds of times

## Experience

The MITRE Corporation  
Senior Software Engineer  
May 2013 - Jul 2015

- Led software design, algorithm development, and implementation of a self-optimizing mesh network of UHF radios (using C++ and Ettus USRPs)
- Demonstrated prototype radios to NATO representatives, and successfully persuaded UK MoD to propose adding the technology to the next SATURN specification revision, which would result in up to 15 times the range and 40 times the data throughput of current-generation radios

Communications Engineer  
Jul 2011 - May 2013

- Created a novel VHDL implementation of a parallelized Viterbi decoder that allowed for 8 times the data throughput of the serial version on which it was based

American Science & Engineering  
Research Co-op, Image Processing  
Summer 2010

- Designed and implemented a threat detection algorithm (in MATLAB) using image processing and machine learning techniques, which had a 97% detection rate and < 5% false alarm rate for a test set of real and simulated threats in airport X-ray scanner images
- Presented results as an invited speaker at the 2011 Gordon Research Conference in Italy