Blake Warren Wulfe

Personal Information

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Research Interests

Reinforcement Learning, Computer Vision, Artificial Intelligence

Education

Stanford University — August 2015 - Present
M.S. Computer Science, Specialization in Artificial Intelligence
GPA: **3.92** / **4.0**

Vanderbilt University — August 2010 - May 2014
B.S Computer Science, Cum Laude & Honors
Minors in Mathematics & Engineering Management
GPA: **3.77** / **4.0**

Research Experience

Stanford Intelligent Systems Lab, Stanford University — April 2016 - Present

Deep Reinforcement Learning of Collision Avoidance Policies

- ◇ Developed a deep reinforcement learning system that solves for optimal policies 10x faster than the baseline dynamic programming method.
- ◇ Built a Boost.Python interface to an existing, high-fidelity aircraft encounter model. (C++)
- ◇ Implemented and compared a variety of deep reinforcement learning algorithms. (Python)
- ◇ Designed and evaluated a set of novel sampling methods to speed learning.

Automotive Scene Risk Prediction

- ◇ Implemented a framework for deriving risk estimates of simulated automotive scenes. (Julia)
- ◇ Addressed issues resulting from collision rarity through importance sampling of a Bayesian network trained on critical scene data. (Julia)
- ◇ Trained neural networks to predict collision risk over varying time horizons. (Python)

Intelligent Agent Action Coordination

- ◇ Implemented a novel method for coordinating UAV actions that reduces collisions 25%-75%.
- ◇ Developed an aircraft encounter simulation framework for evaluating agent policies. (Julia)
- ◇ Designed and ran experiments in order to test the effectiveness of the proposed method.
- ◇ Published results as second author in Digital Avionics Systems Conference (DASC) 2016.

Human-Machine Teaming Lab, Vanderbilt University — May 2013 - August 2013

3D Map Generation of Archaeological Sites

- ◇ Assisted in operating, repairing, and programming autonomous UAVs.
- ◇ Gathered images for conversion to 3D mappings during research trip to archaeological sites in Peru.

Professional Experience

Accenture, Austin, TX — August 2014 - August 2015

Business and Systems Integration Analyst

- ◇ Implemented software providing a natural language interface to users. (Java)
- ◇ Performed client-facing requirement analysis.

Invivolink, Nashville, TN — May 2012 - August 2012

Software Engineering Intern

- ◇ Implemented medical barcode parsing software. (C#)

Projects

Deep Reinforcement Learning with Hierarchical RNNs — January 2016 - April 2016

- ◇ Designed a set of hierarchical recurrent deep Q-network models.
- ◇ Evaluated the performance of the models in traditional hierarchical RL tasks.

Classifying Cities with Convolutional Neural Networks — January 2016 - April 2016

- ◇ Trained a CNN to predict the originating city of a street-level image with 75% accuracy.

Computer & Technical Skills

Programming Languages: Proficient in Python, experience with Julia, C++, C, Matlab
Software: Deep learning frameworks (TensorFlow, Theano)