

DAN J. SCARAFONI

Machine Learning PhD Student

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OBJECTIVE

Machine Learning PhD student at Georgia Institute of Technology with three years experience as a machine learning researcher (two years experience with TensorFlow). Currently looking for summer internships.

EDUCATION

Ph.D. Machine Learning August 2018 - May 2022 (expected)
Georgia Institute of Technology, School of Interactive Computing, Atlanta, GA

M.S.c. Computer Science August 2014 - May 2015
University of Rochester, Rochester, NY
GPA: 3.88, emphasis- machine learning and human-computer interaction
Thesis- "AI-Backed Crowd-Sourced How-to Manuals"
Advisor- Philip Guo

B.S. Computer Science January 2011 - May 2014
University of Rochester, Rochester, NY
GPA: 3.77, Major: Computer Science, Cum Laude, Highest Distinction, Highest Research Honors, Dean's List all but one semester
Thesis- "3D Reasoning in Natural Language Processing"
Advisor- Lenhart Schubert
Remark: publication and oral presentation accepted to Biologically Inspired Cognitive Architectures (BICA) 2014.

WORK EXPERIENCE

MIT Lincoln Laboratory: Associate Staff: Software Engineer May 2015 - August 2018
Sample Projects MIT Lincoln Laboratory, Lexington, MA

- **Dynamic Deep Learning:** Collaborated with group with diverse skill set to automate optimization of convolutional neural network (CNN) architectures with client/server model. Optimized for image classification on CIFAR-10, CIFAR-100, and custom machine vision/image recognition data sets. Became principal deep learning developer. Utilized Python, Keras, TensorFlow, and super computing techniques (MapReduce).
Remark- Results published in Computer Vision and Pattern Recognition (CVPR) workshop.
Remark- Patent for network optimization currently pending.
- **Deep Learning for Virus Tropism:** Led design, experimentation. Built convolutional neural network (CNN) classifier to identify viral tropism from protein sequences in Python, TensorFlow and Keras.
Remark: Results submitted to PLOS Computational Biology.
- **Deep Learning for Black Box Detection:** Cross-disciplinary project with mechanical engineering team. Demonstrated that convolutional deep neural network (CNN) architectures could be used to find crashed aircraft black-boxes in underwater sonar imagery. VGG-based Image classifier written in Caffe and Python
Remark: First use of deep learning to detect black-boxes in sonar imagery (patent pending).
Remark: Project won MIT Lincoln Laboratory's Tech Office Challenge 2016.
Remark: Basis for Presentation at Acoustic Society America 2017.

MIT Lincoln Laboratory Summer Research Program May 2014 - August 2014
Intelligent Firewall Policies MIT Lincoln Laboratory, Lexington, MA

- Implemented forward inference engine in .NET (F#) to find firewall policy anomalies.
- First firewall policy anomaly finder with constraint satisfaction algorithm.
- *Remark: First implementation of a firewall policy checker scalable to enterprise needs.*

Research Assistant Under Professor Lenhart Schubert May 2013 - May 2014
3D Reasoning in Natural Language Processing University of Rochester, Rochester, NY

- Program written in Python, utilized Blender to build, model, and query 3D simulations from information derived from natural language utterances.
- Collaborative team project.

- Designed and built tools for implementing logical predications, object placement, and versatile helping functions.

Research Assistant Under Professor Jeffrey Bigham

ShapeTester- Combining crowd sourcing and AI

May 2012 - January 2014
University of Rochester, Rochester, NY

- Designed project, led implementation.
- Created web server/client for a versatile web game of cat and mouse, which is being used for crowd-sourcing/AI research.

PUBLICATIONS AND PAPERS

Scarafoni Daniel, Thornton Jason, Rieke Darrell, Predicting Influenza A Tropism with Deep Convolutional Neural Networks. PLOS Computational Biology (pending)

Chan, Michael, et al. "Learning Network Architectures of Deep CNNs under Resource Constraints." Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops. 2018.

Bigelow E., Scarafoni D., Schubert, L., Wilson A. "On the Need for Imagistic Modeling in Story Understanding", Biologically Inspired Cognitive Architectures 2014.

Scarafoni, D., Gordon, M., Lasecki, W., Bigham, J. Comparing Human and Automated Agents in a Coordinated Navigation Domain . University of Rochester Undergraduate Research Symposium. April 18th, 2014.

POSTERS AND PRESENTATIONS

Scarafoni, Daniel, Alexander Bockman, and Michael Chan. "Automatic target recognition and geo-location for side scan sonar imagery." The Journal of the Acoustical Society of America 141.5 (2017): 3925-3925.

Scarafoni, D., Bigelow, E., Wilson, A., Schubert, L. "Imagistic Modeling in Story Understanding." University of Rochester Undergraduate Research Symposium. April 18th, 2014.

Bigelow E., Scarafoni D., Schubert, L., Wilson A. "On the Need for Imagistic Modeling in Story Understanding", Biologically Inspired Cognitive Architectures, oral presentation, 2014.

Scarafoni, D., Gordon, M., Lasecki, W., Bigham, J. "Comparing Human and Automated Agents in a Coordinated Navigation Domain ." University of Rochester Undergraduate Research Symposium. April 18th, 2014.

Winner: Professors' Choice Award.

PATENTS

Thornton Jason et al., inventor;. Methods for Learning Network Architectures of Deep Convolutional Neural Networks under Resource Constraints. U.S Application No. 62/589647. Filing Date November 22, 2017. (pending)

Chan, Michael et al, Inventor. Methods for Detecting Objects-of-Interest in Underwater Environments. U.S Application No. 62/443085. Filing Date January 6, 2017. (pending)

AWARDS AND RECOGNITIONS

2018 President's Fellow from Georgia Institute of Technology

Remark: Given to a select group of highly qualified doctoral students in the nation.

Winner: 2016 MIT Lincoln Laboratory Tech Office Challenge

Golden Key International Honors Society

Donald M. Barnard Prize

2014 Undergraduate Research Symposium Professor's Choice Award

HackNY Spring 2014: Best Commandline Interface

Big Red Hacks Fall 2014: top 10 finalist

SKILLS

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|-------------------------|--|
| TensorFlow | two years professional experience |
| Python | three years professional experience |
| Matlab | two years professional experience |
| Languages Spoken | Mandarin Chinese, English, Spanish |
| Other | familiar with most deep learning and scientific frameworks (Caffe, PyTorch, Keras, etc...) |

TEACHING EXPERIENCE

CSC171: Introduction to Java Programming

CSC173: Introduction to Formal Systems

CSC242: Introduction to Artificial Intelligence