

Daniel J. Saunders

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EDUCATION

University of Massachusetts Amherst
College of Information and Computer Sciences
M.S., Computer Science
GPA : 3.85

Spring 2017 - Spring 2019

University of Massachusetts Amherst
College of Information and Computer Sciences
B.S., Computer Science
Concentration in Computation Theory, Artificial Intelligence
GPA : 3.5

Fall 2012 - Fall 2016

University of Massachusetts Amherst
College of Natural Sciences
B.S., Mathematics
Concentration in Mathematical Computing
GPA : 3.5

Fall 2012 - Fall 2016

RESEARCH

Graduate Research Assistant - BINDS Laboratory
- Development of unsupervised learning algorithms using spiking neural networks
- Writing of manuscripts and reporting documentation
Advisor: Professor Robert Kozma

Spring 2017 - Present

Research Intern - Air Force Research Lab, Automatic Target Recognition Center
- Implemented a neural network layer using correlation rules (Hebb's rule, Oja's rule, ...)
- Developed layer-wise generalized classification for neural networks
- Wrote and presented unpublished manuscript: *Designing a Hebbian Learning Layer for Deep Neural Networks*
Advisors: Dr. Roman Ilin and Professor Robert Kozma

Summer 2017

Independent Study - BINDS Laboratory
- Studied memcomputing model of computation
- Implemented and experimented with digital simulations
- Wrote and presented unpublished manuscript: *A Review and Discussion of Memcomputing Machines*
Advisors: Professor Hava Siegelmann and Professor David Mix Barrington

Spring 2016

Independent Study - Circuit Complexity
- Investigated the computational complexity of constant-depth circuits with MOD_6 counting gates
- Created circuit-sampling software to estimate a lower bound on circuit complexity
- Wrote and presented unpublished manuscript: *The Complexity of Constant-Depth Circuits with MOD_6 Gates*
Advisor: Professor David Mix Barrington

Fall 2015

WORK EXPERIENCE

- Programmer May 2016 - Present
 UMass Department of Resource Economics
 Supervisor: Professor Christian Rojas
- Grader - Combinatorics and Graph Theory Fall 2017
 UMass Department of Computer and Information Sciences
 Supervisor: Professor David Mix Barrington
- Programmer / Technician August 2015 - February 2017
 UMass Department of Psychological and Brain Sciences - Cognition and Action Laboratory
 Supervisor: Professor Rebecca Spencer
- Programmer Summer 2016
 Biologically Inspired Neural and Dynamical Systems
 Supervisor: Professor Hava Siegelmann
- Software Engineering Intern Summer 2015
 Epsilon Data Management

PUBLICATIONS

- Daniel J. Saunders, Hava T. Siegelmann, Robert Kozma and Miklós Ruzinkó. *STDP Learning of Image Features with Spiking Neural Networks*. Accepted to IJCNN 2018.
- Hananel Hazan, Daniel J. Saunders, Darpan Sanghavi, Hava T. Siegelmann and Kozma Robert. *Unsupervised Learning with Self-Organizing Spiking Neural Networks*. Accepted to IJCNN 2018.

SERVICE AND LEADERSHIP

- University of Massachusetts - Amherst Graduate Researchers in Data
 Chief Technical Officer Fall 2017 - Present
- University of Massachusetts - Amherst Computer Science Graduate Organization
 Graduate Employment Office Ambassador Spring 2017
- University of Massachusetts - Amherst Marching Band
 Snare Drummer Fall 2012 - Spring 2016

AWARDS, HONORS, GRANTS

- University of Massachusetts Amherst: Undergraduate Dean's List (Three Semesters)
- University of Massachusetts Amherst: M.S. Bay State Fellowship
- University of Massachusetts Amherst: Research Assistantship

PROGRAMMING LANGUAGES / TECHNICAL SKILLS

- Proficient in Python, Java, and MATLAB
- Experience with Shell scripting, C / C++, SQL, JavaScript, Visual Basic
- Familiar with high performance computing and data visualization

RELEVANT GRADUATE COURSEWORK

- Deep Learning (CS 697L, University of Massachusetts - Amherst)
- Machine Learning (CS 689, University of Massachusetts - Amherst)
- Artificial Intelligence (CS 683, University of Massachusetts - Amherst)
- Mathematical Statistics (STAT 607, University of Massachusetts - Amherst)
- Computation Theory (CS 601, University of Massachusetts - Amherst)
- Independent Study - Career Paths Analysis (CS 696CA, University of Massachusetts - Amherst)

PERSONAL

- Blog (<https://djsaunde.wordpress.com>)
- Personal website (<https://djsaunde.github.io>)
- GitHub profile (<https://github.com/djsaunde/>)
- LinkedIn profile (<https://www.linkedin.com/in/daniel-saunders-64908154>)