James S Smith

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RESEARCH FOCUS

I want to build vision systems which learn from data that is from multiple sources and distributions, while protecting data privacy concerns. To work towards this goal, I look at problems such as: **lifelong/continual learning**, **knowledge distillation**, **federated learning**, and **low-label classification**.

EDUCATION

PhD in Machine Learning, Georgia Institute of Technology (current)
Advisor: *Dr. Zsolt Kira*
Enrolled: August 2018 | Expected Graduation Date: December 2022

Master of Science in Electrical Engineering, Auburn University (May 2018)
Advisor: *Dr. Bogdan Wilamowski*
Thesis: "Deep Learning Methods Using Levenberg-Marquardt with Weight Compression and Discrete Cosine Transform Spectral Pooling"

Bachelor of Electrical Engineering, Auburn University (May 2017)
Minors in Computer Science, Political Science

PUBLICATIONS

[1] **James Smith**, Yen-Chang Hsu, Jonathan Balloch, Yilin Shen, Hongxia Jin, Zsolt Kira. "Always Be Dreaming: A New Approach for Data-Free Class-Incremental Learning", International Conference on Computer Vision (ICCV), 2021. **(25.9% acceptance rate)** [Paper] [Code]

[2] **James Smith**, Cameron Taylor, Seth Baer, Constantine Dovrolis. "Unsupervised Progressive Learning and the STAM Architecture", *International Joint Conference on Artificial Intelligence (IJCAI)*, 2021. **(13.9% acceptance rate)** [Paper] [Code]

[3] **James Smith**, Yen-Chang Hsu, Jonathan Balloch, Zsolt Kira. "Memory-Efficient Semi-Supervised Continual Learning: The World is its Own Replay Buffer", *International Joint Conference on Neural Networks (IJCNN)*, 2021. [Paper] [Code]

[4] **James Smith**, Bo Wu, Bogdan Wilamowski. "Neural Network Training with Levenberg–Marquardt and Adaptable Weight Compression", *IEEE Transactions on Neural Networks and Learning Systems*, 30(2), 580-587, 2019. [Paper]

[5] **James Smith**, Michael Baginski. **"**Thin-Wire Antenna Design Using a Novel Branching Scheme and Genetic Algorithm Optimization", *IEEE Transactions on Antennas and Propagation*, 67(5), 2934-2941, 2019. [Paper]

[6] Bo Wu, **James Smith**, Bogdan Wilamowski, Mark Nelms. "DCMDS: Density-Concentrated Multi-Dimensional Scaling Algorithm for Data Visualization", *Journal of Visualization*, 22, 341-357, 2019. [Paper]

[7] **James Smith**, Bogdan Wilamowski. "Discrete Cosine Transform Spectral Pooling Layers for Convolutional Neural Networks", *International Conference on Artificial Intelligence and Soft Computing (ICAISC)*, Zakopane, Poland, 2018. [Paper]

WORKSHOPS

[8] **James Smith**, Seth Baer, Cameron Taylor, Constantine Dovrolis. "Unsupervised Progressive Learning and the STAM Architecture", *Lifelong Learning Workshop at ICML*, 2020.

[9] **James Smith**, Seth Baer, Zsolt Kira, Constantine Dovrolis. "Unsupervised Continual Learning and Self-Taught Associate Memory Hierarchies", *LLD Workshop at ICLR*, 2019.

ACADEMIC TALKS

Unsupervised Progressive Learning and the STAM Architecture
International Joint Conference on Artificial Intelligence (IJCAI) Aug 2021

Memory-Efficient Semi-Supervised Continual Learning: The World is its Own Replay Buffer
International Joint Conference on Neural Networks (IJCNN) Jul 2021

RELEVANT EXPERIENCE

Georgia Tech Atlanta, GA Since Aug 2018
Graduate Research Assistant, College of Computing

SRI International Princeton, NJ (virtual from Atlanta) May 2021 – Aug 2021
Computer Vision Research Intern, PhD

Radiance Technologies Huntsville, AL May 2018 – Aug 2018
Machine Learning Intern

Auburn University Auburn, AL May 2017 – May 2018
Graduate Research Assistant, Department of Electrical and Computer Engineering

Auburn University Auburn, AL Jul 2016 – May 2017
Undergraduate Research Fellow

Naval Research Laboratories Washington, DC May 2015 – Aug 2015
Research Intern

HONORS & AWARDS

NSF Graduate Research Fellowship Program Honorable Mention 2018
Alton B. Zerby and Carl T. Koerner National Outstanding Electrical and Computer Engineering Student Award, L.A. Alumni Chapter IEEE/HKN **(one of two nationwide recipients)** 2017
President's Award, Samuel Ginn College of Engineering **(single recipient)** 2017
ECE Outstanding Student of the Year, Auburn University **(single recipient)** 2017
Auburn University Nominee for Rhodes and Marshall Scholarships 2016
Tau Beta Pi Scholar 2015

SERVICE & LEADERSHIP

Leadership
ICIAP CL4REAL Workshop Committee Member 2021
Co-organizer of Georgia Tech ML PhD Student Seminar Series (Since August 2020) 2020-2022
Graduate Advisor of Eta Kappa Nu at Auburn University 2017-2018
President of Eta Kappa Nu at Auburn University 2015-2016

Mentoring
Mayank Lunayach (MS) Jan 2021 – Present
Yash Jakhotiya (MS) Jan 2022 – Present

REVIEWER

International Conference in Machine Learning (ICML) 2021
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2021
Elsevier Journal of Neural Networks 2019
IEEE Transactions on Neural Networks and Learning Systems 2017

TEACHING EXPERIENCE

Georgia Institute of Technology
Teaching Assistant

CS 8803-LS: Machine Learning with Limited Supervision	Fall 2021
ECE 6258: Digital Image Processing	Fall 2018

Auburn University
Teaching Assistant

ELEC 2110: Electric Circuit Analysis	Summer 2017
ELEC 2210: Digital Electronics	Fall 2017, Spring 2018
ENG 1110: Introduction to Electrical Engineering	Fall 2017