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Kenneth Stewart

Education

2018–present **Ph.D. in Computer Science**, *University of California, Irvine*, Irvine, CA, GPA: 3.9/4.0.
Awarded Full Financial Support for Duration of Program

2018–2020 **M.Sc. in Computer Science**, *University of California, Irvine*, GPA: 3.9/4.0.

2013–2017 **B.Sc. in Computer Science and Engineering**, *Michigan State University*, GPA: 3.66/4.0.
Minor in Cognitive Science; Minor in Japanese

Research Experience

7/2020–10/2020 **Research Contractor**, *Accenture Labs*, Accenture, San Francisco CA.
Created new machine learning algorithms for disentangling event based gesture features to measure their similarity for semi-supervised online learning of gesture variants. Wrote and implemented a research plan. Collaborated with a team of researchers on the project. Lead researcher on IRB approved study to run a gesture elicitation study.

4/2019 – present **Graduate Student Researcher**, *Neuromorphic Machine Intelligence Lab*, University of California, Irvine.
Achieved state of the art few-shot learning on the IBM DVS Gesture dataset using Intel's Loihi neuromorphic processor with newly developed learning algorithms with Prof. Emre Neftci. I was invited by Intel to present my work at their Fall INRC workshop. Live demo of online learning with an event based sensor created. My first author work was accepted by IEEE AICAS 2020 [2,3] and JETCAS [1].

9/2018 – 6/2019 **Graduate Student Researcher**, *Dutt Research Group*, University of California, Irvine.
Using Keras, created an RNN and RCNN to perform arrhythmia detection on ECG signal data, and created a framework to implement the LIME algorithm to explain the results to medical professionals. I also worked with Prof. Nikil Dutt on the Information Processing Factory (IPF) project, and am a co-author in [2].

5/2017 – 8/2018 **Research Assistant**, *Language and Interaction Research Lab.*, Michigan State University.
Conducted research with Prof. Joyce Chai on teaching robots new tasks, by building an end to end human robot interaction system for collaborative task learning. I designed and ran a human robot interaction experiment, combining computer vision, natural language processing, reinforcement learning, and robotic actuation to enable a human to teach the robot through real time interaction. Acknowledged for work in [3].

5/2016 – 5/2017 **Research Assistant**, *CMSE Department*, Michigan State University.
Developed a MATLAB tool that uses Machine Learning to help soil scientists identify particulate organic matter in soil images for the POM project, led by Prof. Dirk Colbry. I am the 1st author on the poster "MATLAB Tool to Identify Soil Particulate Organic Matter from X-Ray Computed Microtomography Images of Intact Samples", 6th International Symposium on Soil Organic Matter.

5/2014 – 5/2016 **Research Assistant**, *Biomedical Ultrasound Lab.*, Michigan State University.
Created new simulations for ultrasound transducer arrays enabling new avenues for biomedical imaging research using FOCUS. I presented my work as a poster, "New Phased Array Models For Fast Nearfield Pressure Simulations" at the Acoustical Society of America (ASA) 2014, Indianapolis, Indiana, USA Conference.

Teaching Experience

Teaching Assistant

- Introduction to Programming, *Fall '18–Spring '19*, University of California, Irvine

Publications

[1] JETCAS 2020 **Online Few-Shot Gesture Learning on a Neuromorphic Processor**, ***Kenneth Stewart*** *et. al*, IEEE Journal on Emerging and Selected Topics in Circuits and Systems.

[2] AICAS 2020 **On-chip Few-shot Learning with Surrogate Gradient Descent on a Neuromorphic Processor**, ***Kenneth Stewart*** *et. al*, 2020 2nd IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS).

[3] AICAS 2020 **Live Demonstration: On-chip Few-shot Learning with Surrogate Gradient Descent on a Neuromorphic Processor**, ***Kenneth Stewart*** *et. al*, 2020 2nd IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS).

[4] Frontiers in Neurorobotics **Neurorobots as a Means Toward Neuroethology and Explainable AI**, *Kexin, Chen and* ***Kenneth Stewart*** *et. al*, Frontiers Media S.A..

[5] DGON 2020 **Zero Velocity Detector for Foot-mounted Inertial Navigation System Assisted by a Dynamic Vision Sensor**, *C. Jao and* ***Kenneth Stewart*** *et. al* , 2020 DGON Inertial Sensors and Systems (ISS).

[6] ESWEEK 2019 **The Information Processing Factory: A Paradigm for Life Cycle Management of Dependable Systems**, *Rambo, Eberle and* ***Stewart, Kenneth*** *et. al*, 2019 IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS).

[7] IJCAI 2018 **Language to Action: Towards Interactive Task Learning with Physical Agents**, *Joyce Y. Chai et. al*, 2018 International Joint Conference on Artificial Intelligence.

Programming Languages

C, C++, Matlab, and Python (Keras, Pytorch, Spiking Neural Networks)

Honors and Awards

2020 **IRB Certified to carry out**.

2020 **Certificate in Mentorship Excellence**.
Awarded by University of California, Irvine's Mentorship Excellence Program

2019 **Intel INRC Fall Workshop Invited Talk**.
Invited by Intel to present workshop talk about my state of the art few-shot learning results using their Loihi neuromorphic processor.

2019 **DAC A. Richard Newton Young Student Fellow**.
Awarded by the Design Automation Conference (DAC) to encourage students to join the electronic design automation field and/or consider graduate studies in this field.

2019 **Certificate in Communication**.
Awarded by University of California, Irvine's Activate to Captivate.

2018–2019 **UCI Dean's Award**.
Scholarship awarded by the University of California, Irvine, to first-year Ph.D. students in recognition of outstanding research potential.