Kaneel Senevirathne

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EDUCATION

University of Delaware Newark, DE
Master of Science in Biomedical Engineering May 2021
GPA: 3.61

Drexel University Philadelphia, PA
Bachelor of Science, Mechanical Engineering & Mechanics December 2018
GPA: 3.57
Dean's List: Winter 2016, Spring 2016, Winter 2017

University of Kentucky Lexington, KY
Bachelor of Science, Mechanical Engineering May 2016
GPA: 3.9
Dean's List: Fall 2014, Spring 2015, Fall 2015, Spring 2016

EXPERIENCE

Sensorimotor Learning Lab, University of Delaware Newark, DE
Graduate Research Assistant December 2019 - May 2021

- Used computational models to examine calculations performed by the brain during various psychophysical assessments.
- Built task programs using MATLAB simulink/stateflow to conduct behavioral experiments on human subjects.
- Collected behavioral data from subjects, critically analyzed them and presented in lab and project meetings.
- Trained state of the art machine learning algorithms to make predictive analysis on behavioral and clinical datasets.
- Mentored undergraduate students by teaching programming, statistical analysis, critical reading and guiding with preparations for research & journal club presentations.

Human Oriented Robotics and Controls Lab, University of Delaware Newark, DE
Graduate Research Assistant September 2019 - December 2019

- Developed computational models to replicate different behaviors (flocking, obstacle avoidance and pattern formation) of swarming agents using MATLAB.

Human Motion Lab, University of Pennsylvania Philadelphia, PA
Clinical Research Assistant April 2018 - September 2018

- Built a custom built staircase, a calibration algorithm/tool to investigate biomechanics of humans during stair climb.
- Collected data from subjects and validated it using the created calibration algorithm and tool.

PROJECTS

Brain Tumor Radiogenomic Classification July 2021 to present

- Currently participating in the Kaggle RSNA-MICCAI Brain Tumor Classification competition.
- Applying deep learning to detect the presence of MGMT promoter methylation in the brain using MRI scans.

Tic-tac-toe using Reinforcement Learning June 2021 to present

- Trained agents to play tick tack toe using Reinforcement Learning(RL) and self play.
- Compared the performance of the agent to a random player to evaluate the performance of the RL agent.
- Currently using deep RL techniques to improve the algorithm and to compare it to the basic RL algorithm.

Finding Phone June 2021 to August 2021

- Trained a novel Baysian Probabilistic model and a Convolutional Neural Network to predict the location of a mobile device in a small sample of images.
- Used the tensorflow functional API to build the UNET algorithm to segment the phone from the images.

Detecting changes in stock prices April 2021 to June 2021

- Scraped stock news & quotes from financial websites and structured them to pandas dataframes.

- Used natural language processing deep learning algorithms to predict the stock price gains/losses after the news.

Stroke & Multisensory Integration December 2019 to May 2021

- Designed an experiment to study how the healthy and stroke affected brain integrate visual and proprioceptive sensory information to localize the hand.
- Coupled a touch screen panel with an existing robotic device (KINARM Endpoint) and calibrated/validated the system to collect behavioral data.
- Collected behavioral data from subjects and used Bayesian statistics to form computational models to investigate how our central nervous system combine visual and proprioceptive sensory information after stroke.

Predicting Parkinson's Disease using machine learning April 2020 to December 2020

- Trained different Machine Learning algorithms to a data set of gait variables from healthy LRRK2 carriers (a genetic mutation found in Parkinson's patients) and healthy subjects to identify a subset of important predictors and to classify subjects.
- Co-authored the poster that won the best poster in CSM 2021.

PROFESSIONAL CERTIFICATES

Coursera, Inc.

TensorFlow: Advanced Techniques Specialization, DeepLearning AI. July 2021 – present

- Learning to use the tensorflow functional API to build exotic non sequential models, custom loss functions and layers.

Deep Learning Specialization, DeepLearning AI. April 2021 – July 2021

- Completed and earned the certificate for the Deep Learning Specialization taught by Professor Andrew Ng.
- Built neural network architectures such as Convolutional Neural Networks & Recurrent Neural Networks and learnt how to make them more efficient by adding techniques such as Dropout, regularization and BatchNorm.

Object Localization with Tensorflow, Coursera Project Network. May 2021

- Completed the project which taught how to use tensorflow for object localization.
- Learnt to create synthetic data for model training, create multi output neural networks to perform object localization and create custom metrics and callbacks in keras.

ACTIVITIES

Philadelphia Barbell Club Philadelphia, PA

Athlete/Member September 2016 - Present

TECHNICAL SKILLS

- Programming: Python (scikit-learn, tensorflow/keras, OpenAI gym, tkinter), MATLAB (Simulink/stateflow).
- Computational Biology – BKIN Dexterit-E, Cortex, Opensim.
- Engineering Design – PTC Creo, Solidworks, Autocad, ANSYS Workbench, LabVIEW.
- Other – MS Office.