EVAN CHUGH

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RESEARCH INTERESTS

Reinforcement learning over continuous state spaces, multi-agent systems, biomedical applications of artificial intelligence.

EDUCATION

- Canisius College — Buffalo, NY
  - Bachelor of Science, Computer Science with minor in Mathematics — 2017-2020
  - Major GPA: 4.0
  - Minor GPA: 4.0

SELECTED COURSEWORK

- CSC 112 - Data Structures
- CSC 213 - Large Scale Programming
- CSC 253 - Computer Hardware
- CSC 281 - Automata and Algorithms
- CSC 310 - Information Organization and Processing
- CSC 330 - Distributed Computing
- CSC 360 - Intelligent Systems
- CSC 395 - Software Engineering
- MAT211 - Calculus III
- MAT 219 - Linear Algebra
- MAT 311 - Abstract Algebra
- MAT 351 / 352 - Probability and Statistics I / II
- Deep Learning Specialization (Coursera, audited)

TECHNICAL SKILLS

- Python
  - Data manipulation: Pandas, NumPy, Scikit-learn, PySpark
  - Data visualization: Matplotlib, Seaborn
  - Machine learning: Scikit-learn, Keras, TensorFlow, PyTorch, OpenAI Gym
- Java/Scala/C++
  - Cluster computing: MPI, Hadoop, Spark
  - Machine learning: Tensorflow
- Computer Science Research
  - Student-faculty collaboration
  - Scientific writing experience

EMPLOYMENT HISTORY

- Research Assistant
    - Collaborated with Computer Science faculty and local medical practices on biomedical research. See ”Research Grants” for more detail.
- Tutor
    - Assisted students in a laboratory setting. Reinforced class concepts in small group and individual settings.
- Grader
    - Graded student homework assignments for Mathematics department.

AWARDS AND HONORS

- Canisius Earning Excellence Program, 2018
- Canisius Earning Excellence Program, 2019
- Canisius Earning Excellence Program, 2020
- Dean’s List, 7 of 7 semesters

RESEARCH GRANTS

2018 - Present (received at Canisius College)

- “Electroskip: Using Machine Learning to Improve Patient Response in Physical Therapy”
    - Investigated the use of recurrent neural networks in creating real-time responses to human motion. Used gait and pressure data for classification of patients with Parkinson’s Disease. Implemented a data collection system into the existing application pipeline. A study based on this work has shown moderate success in correcting the gait of patients with Parkinson’s Disease.
- “Applications of Convolutional Neural Networks in Echocardiogram Analysis”
    - Independently established a relationship between Canisius College and a local medical practice. Gained experience with IRB and HIPAA guidelines. Created a utility to automate removal of PHI. Worked with healthcare providers to label key dimensions frequently referenced during diagnosis. Constructed a convolutional neural network for heart chamber segmentation, achieving 98% pixel-wise accuracy over a validation set by leveraging data augmentation with a training set of approximately 180 images. Publication in progress.
- “Reinforcement Learning: An Examination of Historical Developments”
    - Worked both independently and with Computer Science faculty to update course content for CSC360: Intelligent Systems. Provided written descriptions of major breakthroughs in reinforcement learning along with current areas of research. Created interactive code environments to assist in student understanding.

UNDERGRADUATE RESEARCH EXPERIENCES / INTERNSHIPS

- Canisius College / Northtowns Cardiology
    - “Applications of Convolutional Neural Networks in Echocardiogram Analysis”

PRESENTATIONS

- "Electroskip: Using ML to Improve Patient Response in Physical Therapy" April 2019
- "Applications of Convolutional Neural Networks in Echocardiogram Analysis" April 2020

MEMBERSHIPS

- AAAI
- MAA

EXTRACURRICULAR ACTIVITIES

- Classical Guitar 2007 – Present
    - Studied classical guitar under the instruction of the Castellani-Andriaccio Duo
    - Attended master classes taught by world-renowned concert guitarists
    - Performed regularly in concert and professional settings

REFERENCES – UPON REQUEST