**Reagan Kan**

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**Objective**

A computer programmer seeking a research opportunity for the Georgia Tech MSCS program.

**Education**

BS in Computer Science, Georgia Institute of Technology, Atlanta, GA August 2018 – December 2020

GPA 3.92 / 4.0

**Work Experience**

* **Georgia Tech Research Institute**

**[Fall 2020] Student Research Assistant:** Adversarial Machine Learning for PDF Malware.

* + Implement the Integrated Gradients attribution method.
  + Select features with robustness against adversarial attacks for PDF malware detectors.
  + Write Angular unit-tests for the application user interface.

**[Summer 2020] Research Intern:** Adversarial Machine Learning for PDF Malware.

* + Studied attacks and defenses for adversarial examples in the image & malware domains.
  + Automated the Reverse Mimicry Attack, which targets PDF malware detectors. Leveraged the PeePDF tool.
  + Tested the effectiveness of the automated Reverse Mimicry Attack on custom built TensorFlow PDF malware classifiers.
* **Georgia Tech**

**[Spring 2020] Undergraduate Teaching Assistant:** CS 2050 Intro Discrete Math.

* + Graded assignments and exams, held weekly office hours, co-taught weekly recitation section.
* **Georgia Tech Research Institute**

**[Fall 2019] Machine Learning Student Research Assistant:** EMADE.

* + Researched genetic automated machine learning (autoML).
  + Integrated new evolvable computer vision tracking algorithms into GTRI’s autoML framework, Evolutionary Multi-objective Automated Design Engine (EMADE).

**[Summer 2019] Research Intern:** EMADE.

* + Began efforts to determine the plausibility of integrating a co-evolutionary approach in EMADE.
  + Designed a test bed that runs genetic programming processes that mimic EMADE’s behavior.
  + Developed a polymorphic class that supports co-evolution, implemented using a genetic algorithm, and regular evolution.
  + Wrote python scripts for generating plots and visualizations of the data collected from experiments.
* **Georgia Tech**

**[Spring 2019] College of Computing Tutor:**

* + Helped students taking Discrete Math and Object-Oriented Programming in Java. Meetings with students were one on one and by appointment.

**Projects**

* **[Fall 2020] Data & Visual Analytics Final Project**
  + Trained classifier with 86% test accuracy for predicting the tumor type of Neurofibromatosis patients.
  + Identified drug targets for the most highly expressed genes in Neurofibromatosis patients.
  + Visualized gene/tumor correlations in an interactive heatmap.
* **[Fall 2020] Computer Vision Projects**
  + Hybrid Images: used image filtering to make images that change appearance at near/far viewpoints.
  + Image Classification: compared neural network classifiers, three convolutional networks and a fine-tuned AlexNet, with a 15-class dataset.
  + Local Feature Matching: found correspondences between two images of the same scene using a neural network that incorporates the Harris corner detector and a simplified SIFT.
  + RANSAC: implemented RANSAC to estimate the fundamental matrix of image pairs.
* **[Spring** **2019 – Spring 2020]** **Junior Design Project**
  + NLP sub-team of the Automated Algorithm Design Team, which works to expand EMADE.
  + Added stemming and lemmatization primitives.
  + Implemented architecture for multilabel classification with neural networks.
* **[Spring 2020] Deep Learning Final Project:** 
  + Compared various methods for link prediction on YouTube dataset.
  + Added spectral embedding to SEAL framework, which uses Graph Neural Networks.
* **[Fall 2019] Machine Learning Final Project:** 
  + Compared classification techniques, including regression, random forests, and neural networks.
  + Evaluation based on performance on Crowdsourced Mapping Data Set.
* **[Summer 2019] Sudoku:** 
  + Web based Sudoku game written with Javascript.
* **[Spring 2019] Computer Organization & Programming Project, 2048 Game:** 
  + A recreation of the single player puzzle game. Designed using the C language for Game Boy Advance.
* **[Spring 2019] Objects and Design Final Project, Risk Game:** 
  + An adaptation of the multiplayer board game. Written with Scala and made in collaboration with four team members for the course.

**Programming Languages**

Python(Tensorflow, PyTorch, PySpark), Java, HTML/CSS, Javascript (D3.js), C/C++, Scala

**Relevant Courses**

[Fall 2020] Computer Vision, Intro to Grad Algorithms, Data & Visual Analytics, Computers & Society

[Spring 2020] Intro-Perception & Robotics, Automata & Complexity, Deep Learning, 2nd Course in Linear Algebra, Combinatorial Analysis

[Fall 2019] Systems & Networks, Design & Analysis Algorithms, Intro Artificial Intelligence, Machine Learning, Linear Algebra with Abstract Vector Spaces

[Spring 2019] Data Structures & Algorithms, Objects & Design, Computer Organization. & Programming, Applied Combinatorics

[Fall 2018] Object Oriented Programming in Java, Discrete Math, Statistics and Applications