Derrick Eui Gyu Kim

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Research Interests

Computer Vision, Autonomous Driving

Education

University of Southern California, Viterbi School of Engineering *Sept 2021~*

Master of Science in Computer Science Pending GPA: 3.75/4.00

- *Relevant Coursework*: Applied Probability, Foundations of Artificial Intelligence, Analysis of Algorithms, Database Systems, Computer Graphics

New York University, College of Arts and Science *Graduation: May 2020*

Bachelor of Arts in Computer Science, Honors GPA: 3.75/4.00

- Graduated Cum Laude
- Senior Thesis: Solving SVM using IPM
- *Relevant Coursework*: Algorithmic Problem Solving, Basic Algorithms, Artificial Intelligence, Linear Algebra, Discrete Mathematics

Graduate Research Experience *Jan 2022 ~*

Analysis of Deepfake Detection Algorithms Advisor: Dr. Xuezhe Ma

- Analysis of Deepfake Detection Algorithms by lowering the resolution of images in Deepfake Datasets to see if there are any common clues or features to detect Deepfakes. If there are such features, then there would be a more robust approach to detect such fake images.

Study of Machine Vision Robustness Advisor: Dr. Xuezhe Ma, Ming-Chang Chiu

- Analyzed Human Visual Contrast Sensitivity by creating a new framework based on model architecture and model size to measure the perception ability of machine vision beyond total accuracy
- **On Human Visual Contrast Sensitivity and Machine Vision Robustness: A Comparative Study**[Published and *under review at CVPR*, 2023] *Ming-Chang Chiu, Yingfei Wang,* ***Derrick Eui Gyu Kim****, Pin-Yu Chen, Xuezhe Ma*

Undergraduate Research Experience *Sept 2018 ~ May 2020*

Analysis of Classification Machine Learning Algorithms Advisor: Dr. Mutiara Sondjaja

- Implemented KNN algorithms from scratch on breast cancer cell data set and least squares for classification on a manually created data set
- Implemented Naive-Bayes Algorithm on complex data such as blood cell images and simpler data such as images of handwritten digits(0-9)
- Studied the theoretical mathematics behind Support Vector Machines and Naive Bayes Algorithm
- Experimented with Interior Point Method and the challenges involved if the number of input points is scaled up.
- On a training data set that has binary labels, formulated a Support Vector Machine Quadratic Program, using KKT conditions. With the newly evolved constraints, attempted to find the optimal hyperplane that classifies the modified problem.

Projects for Relevant Coursework

1. Artificial Intelligence(NYU)
- Implemented Davis Putnam Algorithm to generate a Hamiltonian Path
- Implemented a program that can solve the Post Correspondence Problem

2. Foundations of Artificial Intelligence(USC)
- Implemented Breadth First Search, Uniform Cost Search, and A* Search algorithm
- Implemented Alpha-Beta algorithm to play Go against artificial competitive players designed by Teaching Assistants that used a mixture of QLearning algorithm, Alpha-Beta algorithm, and Greedy algorithm
- Created a Neural Network classifier for MNIST dataset from scratch

3. Analysis of Algorithms(USC)
- Implemented a working solution of the Sequence Alignment Problem in python

4. Advanced Mobile Game Design(USC)
- With a group of coworkers, I coded a working game in Unity called "NFT Tinder", which is a satire on the modern obsession with NFT
- The game was designed to maximize profit from buying NFTs and selling them later based on future positive and negative trends

Services and Awards

1. NYU Presidential Honors Scholar *Sept 2016~May 2020*
- Selected based on academic merit, leadership, and involvement in community
- Participated in a trip to Madrid to learn about the Islamic conquest of the Iberian Peninsula

2. Vice President of NYU Association of Computational Machinery (ACM) *Sept 2017~Dec 2018*
- Organized community events for the wider NYU ACM community with fellow eBoard members
- Invited people from Google Tensorflow, Facebook AI research, Twilio, etc. to give talks and inspire the tech community at NYU

3. NYU College of Arts and Science Future Scholarship Recipient
- Received an average of $10000 per academic year due to a mixture of financial need and good academic standing

4. NYU Dean's List for Academic Year (3 times)

5. NYU Dean's Undergraduate Research Fund Recipient
- Received $1000 to finish Undergraduate Senior Thesis

Selected Work Experiences

1. Web Development Intern at NYU Office of Residential Housing *May 2017~Jan 2018*
- Designed and edited the NYU housing website using Microsoft Visual Studio C#
- Updated bugs and fixed design layouts of multiple Github repository projects

2. Member of the Republic of Korea Army *Oct 2014 ~ July 2016*
- Served and discharged from ROK Army as Signaller, Sergeant
- Squad Leader for 11 months, displaying responsibility, solidarity, patience, strength of character, and good judgment consistently throughout

Skills, Tools, and Test Scores

Languages: Korean (Native), English(Native)

Software: Java(Expert), Python(Expert), C++(Intermediate)

Tools: Pytorch, Git, Matplotlib, Seaborn, Unity, OpenGL

Test Scores: TOEFL 116, SAT 2250, GRE Verbal 161, Quant 165, Writing 5.0