Jieun Seong

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Education

Georgia Tech - MS in Comp. Sci. and Engineering, *GPA: 3.60/4.00* 2020 – Present
Georgia Tech - MS in Mathematics, *GPA: 3.80/4.00* 2017 – 2019
Georgia Tech - BS in Discrete Mathematics, *GPA: 3.92/4.00* 2013 – 2017

Research

Differentiability at the Tip of Arnold Tongues 2019 – 2021
Proved analytically the differentiability at the tip of the Arnold Tongue – the set of parameters in the standard map equation that gives a given rotation number. Used C and Julia to carry out numerical experiments to research the differentiability.

Skills

Programming Langauges
C, C++, Python, MATLAB, Java, TeX
Libraries
PyTorch, OpenCV
Tools
Git, Visual Studio, Unity, Colab
Knowledge
Computer Vision, Dynamical Systems, Differential Equations, Numerical Analysis, Linear Algebra, Machine Learning, Modeling and Simulation, Deep Learning
Languages
English (Fluent), Korean (Native), Japanese (Intermediate), Chinese (Beginner)

Projects

Semantic Segmentation of Images with Deep Learning 2022
Implemented Pyramid MaxPooling to semantically segment different objects in images from Camvid and Kitti datasets with PyTorch.

MNIST Handwriting Recognition 2022
Implemented a simple softmax regression and two-layer multi-layer perceptron (MLP) for MNIST Handwriting Recognition from scratch.

Differential Growth: Modeling and Simulation 2022
Modeled and simulated the exquisite growth patterns found in nature – plant leaves, coral reefs, cabbage, brain, and fingerprints.

ConvNet for CIFAR-10 2022
Built a two-layer network from scratch and built a two-layer network and a vanilla convolutional neural network using PyTorch.

SIFT Local Feature Matching 2022
Implemented Harris Corner Detectors, Local Feature Descriptors, and Feature Matching methods to match points in two images of an object.

Camera Calibration and Fundamental Matrix Estimation 2022
Estimated the camera projection matrix and fundamental matrix given matching points in two images.

Style Transfer 2022

Applied a SqueezeNet to produce a new image that reflects the content of one but the "artistic" style of the other. Used PyTorch.

Network Visualization 2022

Implemented Saliency Maps and Gradient Class Activation Mapping (GradCAM) for model interpretability on images. Used PyTorch.

Source Separation 2022

Modified the modules inside Open-Unmix music source separation model to better its performance in separating different sources in music.

Experiences

Graduate Teaching Assistant 2017 – Present

Georgia Institute of Technology Atlanta, GA

Teach 30-60 students every semester on college math subjects like linear algebra, multivariable calculus, and differential equations. Evaluate their performances regularly by collaborating with other instructors and teaching assistants on grading quizzes, projects, and exams. Hold weekly office hours to help students who want extra help.

Digital Systems Design Lab Assistant 2014 – 2015

Georgia Institute of Technology Atlanta, GA

Awards

Georgia Tech President's Undergraduate Research Award $1,500 2016

Outreach

Leader of Women in Georgia Tech Korean Student Association 2018 – 2019

Secretary of Georgia Tech Korean Student Association 2017 – 2019

Volunteer at Korea Methodist Church of Norcross Food Pantry 2014 – 2015

Women in Electrical and Computer Engineering 2014 – 2015

Study Abroad in China - "Language for Business and Technology: China" 2015