Haekyu Park

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Education

Ph.D., Computer Science — Aug 2018 - Present
Georgia Institute of Technology, Atlanta, GA
Advisor: Dr. Polo Chau

B.S., Computer Science and Engineering — Mar 2012 - Aug 2017
Seoul National University, Seoul, Republic of Korea
Graduated with honors (Cum Laude)

Research Experience

Data Science Intern — May 2019 - Aug 2019
NVIDIA, Austin, TX
Mentor: Bartley Richardson, Brad Rees, Joe Eaton
Internship results integrated into and presented at NVIDIA's KDD 2019 tutorial.

Graduate Research Assistant — Aug 2018 - Present
Georgia Institute of Technology, Atlanta, GA

Undergraduate Research Assistant — June 2016 - Aug 2017
Seoul National University, Seoul, Republic of Korea

Grants and Honors

Amazon AWS Research Grant — 2018
Co-PIs: Nilaksh Das, Scott Freitas, Duen Horng Chau
Funded $5,000 in AWS cloud credits

National Scholarship For Science and Engineering — 2015
Merit-based

Publications

Summit: Scaling Deep Learning Interpretability by Visualizing Activation and Attribution Summarizations
Fred Hohman, Haekyu Park, Caleb Robinson, Duen Horng Chau
IEEE VIS (VAST), 2019.
[PDF] [Demo]

Visual Analytics for Interpretability on Deep Neural Networks
Haekyu Park, Fred Hohman, Nilaksh Das, Caleb Robinson, Duen Horng Chau
Women in Machine Learning Workshop (WiML), 2019.

MLsploit: A Framework for Interactive Experimentation with Adversarial Machine Learning Research
Nilaksh Das, Siwei Li, Chanil Jeon, Jinho Jung, Shang-Tse Chen, Carter Yagemann,
Evan Downing, Haekyu Park, Evan Yang, Li Chen, Michael Kounavis, Ravi Sahita,
David Durham, Scott Buck, Duen Horng Chau, Taesoo Kim, Wenke Lee
Knowledge Discovery and Data Mining (KDD) Workshop - Project Showcase, 2019.
[PDF]

NeuralDivergence: Exploring and Understanding Neural Networks by Comparing Activation Distributions
Haekyu Park, Fred Hohman, Duen Horng Chau
Poster, IEEE Pacific Visualization Symposium (PacificVis), 2019.
[PDF] [Demo]

SIDE: Representation Learning in Signed Directed Networks
Junghwan Kim, Haekyu Park, Ji-Eun Lee, and U Kang
The Web Conference (WWW), 2018.
[PDF]

A Comparative Study of Matrix Factorization and Random Walk with Restart in Recommender Systems
Haekyu Park, Jinhong Jung, and U Kang
IEEE Big Data, 2017.
[PDF]

Talks and Presentations

NeuralDivergence: Exploring and Understanding Neural Networks by Comparing Activation Distributions
Apr 2019, Poster Presentation, PacificVis

A Comparative Study of Matrix Factorization and Random Walk with Restart in Recommender Systems
Dec 2017, Oral Presentation, IEEE Big Data

Teaching

Graduate Teaching Assistant Fall 2019
Georgia Institute of Technology, Atlanta, GA
Data and Visual Analytics (CSE 6242)
Designed homeworks, held weekly office hours, and mentored student team projects for 264 students.
Instructor: Polo Chau

Open-source Research Projects

Summit: Scaling Deep Learning Interpretability by Visualizing Activation and Attribution Summarizations
Summit is an interactive visualization that scalably summarizes what features a deep learning model has learned and how those features interact to make predictions. It is published at IEEE VIS (VAST), 2019.

MLsploit: A Framework for Interactive Experimentation with Adversarial Machine Learning Research
MLsploit is a user-friendly, cloud-based system that enables researchers and practitioners to rapidly evaluate and compare state-of-the-art adversarial attacks and defenses for machine learning (ML) models. It is published at Knowledge Discovery and Data Mining (KDD) Workshop - Project Showcase, 2019.

SIDE: Representation Learning in Signed Directed Networks
SIDE is a general network embedding method that represents both sign and direction of edges in the embedding space. It is published at the Web Conference (WWW), 2018.

A Comparative Study of Matrix Factorization and Random Walk with Restart in Recommender Systems
We provide a comparative study of matrix factorization and RWR, which are the most representative recommender systems. It is published at IEEE Big Data, 2017.

Projects

RAPIDS and Cybersecurity: A Network Use Case 2019
Keywords: RAPIDS, NVIDIA, GPU-acceleration, Graph, Personalized Page Rank
Presented at KDD 2019 NVIDIA RAPIDS tutorial with the cybersecurity use case notebook.

Explore the history of space and interplanetary travel through a visualization of space data 2018
Keywords: Information Visualization, Scrollytelling, d3.js
`https://psy901.github.io/space-mission-project/`

Recommender System for Videos on Oksusu Application 2017
Keywords: Deep Learning, Sequence/Word Embedding, Approx. k-NN, Heterogeneous Features
SK Telecom, Seoul, Republic of Korea

A Fast Data Compression with Shared Virtual Memory in Heterogeneous System Architecture 2017
Keywords: OpenCL, GPGPU, SVM, HSA
Undergraduate thesis

Personalized Recommendation for Credit Card Rewards 2016
Keywords: Coupled Matrix Factorization, Time Series Data
Hyundai Card, Seoul, Republic of Korea

Skills

Programming Languages
Python, JavaScript, HTML, R, Matlab, Java, C, C++, Ocaml, Scheme

Machine Learning / Deep Learning / Data Science
TensorFlow, Keras, scikit-learn, OpenCV, Numpy, Pandas, SciPy, NetworkX

GPU-accelerated Data Science
cuGraph, cuDF, cuML, BlazingSQL, OpenCL

Data Visualization
D3.js, HoloViews, Matplotlib, WebGL, ggplot

Professional Service

Reviewer
WiML 2019
KDD 2019
ICML 2019

Professional Membership
The Institute of Electrical and Electronics Engineers (IEEE). Since 2019.