

Sun Woo Kim

Education

- 5/2021 **PhD, Computer Science**, Indiana University Bloomington, GPA – 3.82.
- 5/2016 **BS, Physics**, University of Illinois at Urbana-Champaign, GPA – 3.39.

Research Experience

- 8/2017– Present **School of Informatics, Computing, and Engineering**, Bloomington, IN,
Independent Study.
 - Build a binary version of the WaveNet model to analyze the latent variables of speech
 - Implemented a custom GRU cell in Tensorflow with binarized weights and operations on inputs binarized with Lloyd Max quantization
- 5/2015– 5/2016 **National Center for Supercomputing Applications**, Urbana, IL,
CyberGIS SPIN Intern.
 - Designed and developed a parallel program employed in CyberGIS Summer School on Big Data Landscapes
 - Created a prototype for an interactive web application with ExtJS that displayed Twitter activity within major cities in the United States along with plots drawn with D3.js

Projects

- 3/2017– 5/2017 **Identification and Localization of Siren Signals.**
 - Constructed a siren detecting architecture distinct from existing work using a fast singular vector model classification method, specifically non-negative matrix factorization (NMF) and support vector machines (SVM)
 - Trained a dimensionality reduction model using limited training data and performed localization with the returned set of general basis vectors
 - Experimented on simulated data and showed accurate estimation of ambulance location
- 10/2016– 12/2016 **Multitask Learning Accura-SEA on Stock Prices.**
 - Attempted to use historical stock price data to predict future directions through Multitask Learning
 - Studied the relationship between the number of tasks and the accuracy performance of Multitask Factorized Gradient Descent and other regression algorithms
 - Evaluated the performance of each models through bootstrapping and meta-parameter selection using internal k-fold cross-validation
- 5/2015– 7/2015 **Parallel Terrain Analysis and Predictive Ecosystem Mapping.**
 - Partitioned and distributed rows of the input image to number of processes desired by the user and calculated slope gradients in parallel through the Message Passing Interface (MPI) on HPC
 - Performed k-means clustering to create a terrain classifier with Apache Spark's MLlib (Machine Learning library) from information gathered through studying archival publications

Teaching Experience

- 8/2016– 5/2017 **Indiana University Bloomington**, Bloomington, IN,
Associate Instructor for P565: Software Engineering.
 - Managed 3 groups of 4 students per semester on course final projects while guiding them through Agile Methodology
 - Created assignments and gathered required supplementary documentation templates on paper and on JIRA
 - Facilitated course by grading and taking attendance promptly

Technical Skills

- Advanced Python (Tensorflow, sklearn), Linux
- Intermediate C/C++, Java
- Basic \LaTeX , HTML, Javascript, MySQL