Huiwen Wu

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Education

University of California, Irvine, CA Dec. 2019
Ph.D Degree in Math, Specialization in Applied and Computational Math
GPA: 3.95

University of California, Irvine, CA June 2016
Master's Degree in Math, Specialization in Applied and Computational Math
GPA: 3.91

Sichuan University, Chengdu, China June 2013
Bachelor of Arts, Math and Applied Math
GPA: 3.73

Experience

Research Assistant, UCI Sept. 2014-present

1. randomized fast solver for least squares problems
2. randomized fast subspace descent methods for convex optimization problems

Research Scientist Intern, Black Sesame Tech. Jan. 2019- March 2019

1. Studied various reinforcement methods including Deep Q Network, Gradient Temporal Difference Methods, Gradient Policy Methods.
2. Implemented Deep Deterministic Gradient Methods for auto-driving problems on Carla simulator.

Projects

NLP Sentiment Analysis with Emoji Labels July 2019

1. Converted training/testing features into index list using pre-trained GloVe model
2. Inserted a Keras Embedding Layer given word to vector mapping.
3. Built and trained a 2-layer LSTM network.
4. Achieved sentiment classification for sentences and labeled them with emoji.

Game Recommendation System Aug. 2019

1. Scrapped user data (17.3MB) and app data (510.2MB) from Steam.
2. Stored app data in MySQL database.
3. Trained content-based model and item-based model.
4. Created a website providing 5 recommendations for each user in list.

Randomized Fast Subspace Descent Scheme Oct. 2018- July 2019

1. Developed a general scheme of gradient methods.
2. Analyzed convergence for convex problems and strongly convex problems.
3. Compared with Gradient Descent, Conjugate Gradient, Block Conjugate Gradient, Stochastic Gradient and Block Newton Methods.

Kaggle Competitions Home Credit Default Risk Aug. 2018

1. Developed k-fold LightGBM (Light Gradient Boosting Machine) model.

2. Made Prediction of each client's repayment capabilities.
3. Achieved AUC (area under the curve) to 0.787 compared with Logistic Regression model 0.671 and Random Forest model 0.678.
4. Training data has 307,511 observations and 122 features and testing data has 48,744 observations and 121 features.

Non-uniform Sampling Fast Least Squares Solver Aug. 2016- May 2018

1. Developed fast solver for large scale ill-conditioned least squares problem.
2. Constructed preconditioner via importance sampling and Gauss Seidel Algorithms.
3. Improved performance up to 70% compared to diagonal preconditioned conjugate gradient methods.
4. Largest matrix size is around 27 million.
5. Applications in recommendation systems.

Conference Presentation Jun. 2017

Southern California Applied Mathematics Symposium, University of California, Irvine, CA

Publication

A Preconditioner Based on Non-Uniform Row Sampling for Linear Least Squares Problems, Submitted June 2018, arXiv:1806.02968 [math.NA]

Skills

Programming: Proficient with Python Numpy, Scipy, Sklearn, Pandas, Tensorflow, Matlab, MySQL

Memberships/Affiliations

Society for Industrial and Applied Mathematics (SIAM)