Yutong Dai

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Education

Lehigh University (LU), PA, USA — Sept.2019 – May.2024
Ph.D. in Industrial and Systems Engineering — GPA: 4.00/4.00

University of Illinois at Urbana-Champaign (UIUC), IL, USA — Sept.2017 – May.2019
M.S. in Statistics — GPA: 4.00/4.00

Sichuan University (SCU), Sichuan, China — Sept.2013 – Jun.2017
B.S. in Mathematics with honors (Concentration in Statistics) — GPA: 3.69/4.00

Research & Experiences

Research: **A Subspace Acceleration Method for Minimization Involving a Group Sparsity-Inducing Regularizer**[Link] Sept.2019 – July 2020
Advisor: Daniel P. Robinson and Frank E. Curtis Submitted to *siam journal on optimization,*

- Proposed a new method for minimizing an objective function that is the sum of a convex function and a group sparsity-inducing regularizer by utilizing support identification, domain decomposition, and subspace acceleration techniques
- Obtained super-linear local convergence rate
- Implemented in Python to solve large scale group-ℓ_1 regularized logistic regression problems and outperformed a state-of-the-art method on the LIBSVM test data sets

Research: **Convergence Rate Analysis of Parallel Block Coordinate Descent Method**[Link] Dec.2016 – Jun.2017
Advisor: Yang Weng **Accepted by** *Journal of System Science and Complexity*

- Proposed synchronous parallel block coordinate descent algorithms for minimizing a class of composite functions with sub-linear convergence rate
- Implemented algorithms to solve large scale logistic regression with ℓ_1 norm penalty

Internship: **Anheuser-Busch InBev** Jan.2018 – May.2019
Data Scientist Urbana, IL

- Provided analytics and benchmarks of farmer production performance for global agronomist and procurement teams to improve barley productivity
- Revised machine learning algorithms with agronomists' on field knowledge to formulate a global barley production environment model that accounts for complex weather and soil systems
- Developed predictive models to suggest optimal management packages (variety, fertilizer, fungicide, crop rotation...) that help growers to hit highest barley yield
- Designed Smart Barley UI/UX prototype in Rshiny to dynamically visualize analytic results, like growers' production performance and highest yield management packages, and delivered it to agronomist teams
- Collaborated with computer scientists to scale up analytics results and put them into production environments

Project: **Show and Tell: Neural Image Caption**[Link] Nov.2017 – Dec.2018
Group Leader Advisor: Prof. Justin A. Sirignano

- Fine-tuned the 101 layered Residual Network pre-trained on the ImageNet as an image encoder to interpret image contents
- Designed and trained a Recurrent Neural Network with 3 layers of Long short-term memory(LSTM) cells as an image decoder to convert visual information into texts
- Calculated vocabulary scores from the image decoder's outputs and generated captions using the beam search method to obtain high quality captions
- Designed a simple UI for general audience to explore the prototype

For my comprehensive descriptions of my projects, please go to my home page.

Skills

- Programming&Modeling Languages: Python, R, AMPL
- Optimization Solvers: MOSEK, CPLEX

Honors & Awards

- *Rossin Doctoral Teaching Fellowship* 2019
- *Bachelor's Thesis: Best Paper Award* (**0.58%**) 2017
- *Dean's List* (Top 10) 2014-2017
- *Meritorious winner*, 2016 Interdisciplinary Contest In Modeling (**8%**) [Link] 2016
- *2nd Prize*, National College Students' Mathematical Modeling Competition 2015