CHUNLEI ZHANG

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EDUCATION

Clemson University, South Carolina, USA Aug 2015 - Aug 2019
Ph.D. Candidate in Electrical Engineering and Minor in Mathematics GPA: **4.0/4.0**

Relevant Courses: Data Analysis, Regression and Least Squares Analysis, Statistic Method, Machine Learning, Convolutional Neural Networks for Visual Recognition, Linear Programming, Nonlinear Programming, Discrete Optimization, Stochastic Process

Beihang University, Beijing, China Sep 2011 - Jul 2015
Bachelor of Engineering in Electronic and Information Engineering GPA: **3.9/4.0; Top: 5%**

DATA SCIENCE PROJECTS

Identifying Authors of Emails (Text Classification) Feb 2019 - Mar 2019
Course Project in Python *Clemson University*

- Preprocessed text data including stemming words with NLTK, text vectorization with TfidfVectorizer, splitting training/testing sets with sklearn
- Fitted models using Naive Bayes, Logistic Regression, Support Vector Machine (SVM), Decision Tree, Random Forest, and AdaBoost on training set
- Chosen hyperparameters on validation sets and evaluated obtained models on testing set via confusion matrix including accuracy, precision, recall, etc

Regression Analysis of Blood Enzyme Levels and a Health Indicator Sept 2018 - Nov 2018
Course Project in R *Clemson University*

- Applied Variance Inflation Factor (VIF) to check the potential multicollinearity within 100 kinds of blood enzyme
- Fitted models based on correlation, Stepwise Regression, Ridge Regression and LASSO with proper penalty parameters
- Conducted hypothesis test to determine the model suitability based on p-value and obtained the PRESS value of each model
- Selected the most appropriate model based on Akaike Information Criterion (AIC) and cross validation results and wrote a report

Regression Analysis of Local Meteorology and Air Pollution Aug 2018 - Oct 2018
Course Project in R *Clemson University*

- Fitted linear models using forward stepwise, backward stepwise, bidirectional stepwise, and Lasso regression
- Visualized the standardized residual plot, QQ-plot, and ACF plot of each model to check the linear regression assumptions
- Conducted Box-Cox Transformation to transform non-normal dependent variable into a normal shape
- Determined the most appropriate predictive model by comparing the AIC and PRESS value.

RESEARCH EXPERIENCE

Research on Decentralized Optimization Algorithms Jan 2017 - Present
Research Assistant; Advisor: Dr. Yongqiang Wang *Clemson University*

- Designed two novel algorithms which enabled data privacy-preservation in decentralized optimization based on Alternating Direction Method of Multipliers (ADMM) and Subgradient Method
- Analyzed the convergence rate of the ADMM-based algorithm, which is $O(1/k)$
- Implemented the ADMM-based algorithm on twelve Raspberry Pi boards in C++
- Evaluated the proposed algorithms on average consensus problem, linear regression problem, etc in C++

Research on Application of Decentralized Optimization Sep 2015 - Dec 2016
Research Assistant; Advisor: Dr. Yongqiang Wang *Clemson University*

- Proposed two distributed localization algorithms based on ADMM and proved the convergence rates of the proposed algorithms are $O(1/k)$

- Compared the proposed algorithms with some existing localization algorithms via Matlab simulations, which suggested a 15% performance improvement in localization accuracy

SKILLS

- Fluent: Python (NumPy, pandas, Matplotlib, scikit-learn), Matlab, R, Git, Latex
- In Training: Java, Hadoop, MapReduce, Python (Keras, Tensorflow), SQL

PUBLICATIONS

[7] **C. L. Zhang**, Y. Q. Wang, Privacy-preserving Decentralized Optimization based on ADMM. *IEEE Transactions on Information Forensics and Security 14.3 (2019): 565-580.*

[6] **C. L. Zhang**, Y. Q. Wang, Distributed event localization via alternating direction method of multipliers. *IEEE Transactions on Mobile Computing 17.2 (2018): 348-361.*

[5] **C. L. Zhang**, Y. Q. Wang, Enabling Privacy-preservation in Decentralized Optimization. Accepted to *IEEE Transactions on Control of Network Systems*

[4] **C. L. Zhang**, Y. Q. Wang, Sensor Network Event Localization via Non-convex Non-smooth ADMM and Augmented Lagrangian Methods. Accepted to *IEEE Transactions on Control of Network Systems.*

[3] H. Gao, **C. L. Zhang**, M. Ahmad, Y. Q. Wang. Privacy-Preserving Average Consensus on Directed Graphs Using Push-Sum. *IEEE Conference on Communications and Network Security, 2018.*

[2] T. Shang, **C. L. Zhang**, K. Li, J. W. Liu, Nonlinear quantum network coding with classical communication resource. *IEEE Globecom Workshops, 2015.*

[1] **C. L. Zhang**, H. Gao, Y. Q. Wang. Enabling Privacy-preservation in ADMM based Decentralized Optimization using Function Decomposition. Submitted to *IEEE Transactions on Signal Processing.*

AWARDS

Chinese Government Award for Outstanding Self Finance Students Abroad	2018
Harris Award for the Outstanding Graduate Researcher	2018
Scholarship of Excellent Academic Performance of Beihang University	2011-2014
National Endeavor Fellowship of China (10%)	2012-2013
Academic Excellence Student of Beihang University (5%)	2012-2013