Zezhong Fan

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Education
Columbia University
Data Science
Cumulative GPA: **3.6**/4.0   *2021-2022*
- Relevant Coursework: Data Visualization, Algorithm, Big Data Analytics, Deep Learning, Natural Language Processing, Database, Computer System for Data science, Computer Vision, Statistical Modeling, Machine Learning

University of Wisconsin,Madison | Madison,Wi   *2017-2021*
Statistic and Mathematic, Computer science (minor)
- Cumulative GPA: **3.852**/4.0
- Honors: Dean's List (**5 times**, 2017-2019)
- Relevant Coursework: Intro Stochastic Processes, Programming I, II, III, Intro Theory of Probability, Intro Statistical Methods, Machine Organizatn&Progrmng , Intro Computer Engineering, Linear Optimization, Applied Regression Analysis, Machine Learning, Nonparametric Statistic, Regression Tree Method
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RESEARCH & PROJECT
Real Time Person Identification in Multiple Object Tracking.   *Nov 2021 - Dec 2021*
Project member
- Enhanced ReID model by training with generated images by DCGAN
- Reimplement feature extractor in Yolov5 based DeepSort algorithm
- Modified backbone by adding squeeze and excitation module in residual blocks.
- Revised model with tricks including random erasing augmentation, last stride reduction, center loss, SE block, batch norm neck, IBN module,etc.
- Decreases in ID switches by 10% in MOT16 evaluation with 1ms latency of tracking with GPU.

Student Resource Management System.   *Jan 2022 -Mar 2022*
Project member
- Implement a web application using Flask to manage the college resources.
- Implement database management system of university recourses (mySQL).
- Implemented B+ tree to realize optimized search quality and efficiency
- Manipulate data with mangoDB and manage data in BigQuery.

COVID19 Big Data Prediction   *Nov 2021 - Dec 2021*
Project member
- Predict vaccination rate and infection rate using deep learning and machine learning models
- Manipulating data on google cloud platform and using spark and big query.
- Visualize the vaccination in NYC with JavaScript and d3.js.
- Use airflow to fetch the data and do the prediction each day

Heart disease prediction based on Random Forest and LSTM | Remote   *Sep 2020 - Dec 2020*
Researcher | A research project under the guidance of Professor Gregory Kesden
- Constructed a heart disease prediction model based on random forest and LSTM to find out influential features
- Applied LSTM, KNN and DNN to figure out the best algorithms and improved the model prediction accuracy
- Achieved around 87% accuracy of probability prediction, highest compared with other alternative algorithms between 82% and 84%
- Developed a deep understanding of how machine learning method would be applied in scientific research
- **Paper to be submitted**: The Heart disease prediction based on Random Forest and LSTM

Graph Neural Network (GNN) program | Remote   *Sep 2020 - Now*
Researcher | A research project in collaboration with the Ph.D research group
- Establish a Diffusion-Convolutional Neural Networks for computer vision and deep learning research
- Focused on graph neural network including GNN, GCN, GraphSAGE, GPNN and GATs to make comparison

Language & Cognitive Neuroscience Research | Madison, WI, USA   *Dec 2019 - Dec 2021*
Researcher | A LCNL Lab research in psychology under the guidance of Professor Matt Cooper-Borkenhagen
- Analyzed the pattern of words with N-Gram statistical module in Python and R programming to explore the learning process of children
- Found all proximal dependencies for thousands of words, visualized and plotted the output
- Calculated thousands of words in N-Gram statistical model to find the relationship between orthography and phonology
- Built a LSTM neural network and BP network to simulate the learning process of children
- Studied knowledge in NLP and implemented GPT2 model to generate news title.
- Built elegant and modern user interface in JavaFX platform to attract people using it

COMPUTER SKILLS
- **Python**: Pytorch, Tenorflow, Flask, Spark
- **Java**: expert in Java Swing, SVC,Spring, web frameworks, JSP
- **C programming**: proficient in C and experience with C++, C#
- **R programming**: skilled in data cleaning, statistical modeling and high-volume data analytics
- **Website design**: skilled in using HTML+ JavaScript + MySQL for website frontend design
- **Other tools**: Amazon Web Services (AWS), Alibaba Cloud (Aliyun), Database management/migration

OTHER SKILLS
- **Language**: Chinese (Native); English (Proficient)