Brian Zhang

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Education

2011.08 – 2017.05	**Ph.D.**	Aerospace Engineering Area: Numerical Computation	*Univ. of Illinois at Urbana-Champaign (UIUC)*, GPA 3.9
2009.08 – 2011.05	**B.S.**	Engineering Mechanics	*Southeast University, China*,GPA 3.8
2007.08 – 2009.05		Computer Science	*Southeast University, China*,GPA 3.8

Work Experience

Google, Mountain View *June 2018 - Current*

Software Engineer, Google Assistant | Google Research

- Developed graph-based spatial-temporal model to capture cross-region effects of infectious disease, designed and performed forecasting/nowcasting for different region levels based on sparse signals from privacy-preserving source.
- Improved on existing ARIMA/VAR model and created LSTM and Seq2Seq with attention model to utilize long-term sequential signals, and captured time delays from historical information, which achieved 30% improvement on RMSE.
- Collaborated with partners to set ground-truth labeling guidelines, developed pipelines and executed video content analysis, extracted signals, aggregated analytics of representational biases and conducted research on marketing videos.
- Initiated x-functional team projects and set launch strategies, designed, implemented and evaluated Google Assistant features and partner requests in media and communication, and drove the first launch of Assistant on Automobile.
- Identified system latency, stability and development bottleneck, extracted core component from legacy architecture and designed news libraries shared by multiple Google Assistant products, which achieved 4x measured improvement.
- Analyzed Assistant feature headroom and increased traffic and engagement by launching browsing experience for Google News and Podcast, media query disambiguation, call/message with bias to contacts, and enhanced on-device NLU.

CU Aerospace - Lockheed Martin, Champaign *Sep 2017 - May 2018*

Project Consultant, Quantitative Engineering

- Co-developed MPI-based parallel multi-physics simulation engine which specializes in high-curvature geometries and unstructured discretization and consistently outperforms commercial packages including ANSYS and Abaqus.
- Led a team of 3 to develop modularized architecture and user-extendable interface, addressed compatibility for pre/post processing softwares, met partner feature requests and conducted research plans with the simulation engine.
- Developed a deep neural network and predicted the kinetic energy and temperature for a microvascular heat exchanger given its physical characteristics, which greatly enriched the parameter space and assisted in finding optimal design.

Akuna Capital, Chicago *Jun 2017 - Aug 2017*

Quantitative Software Enginner Intern, Auto Trading

- Created data filtering, smoothing and overfit checking to the interpolation library. Implemented visualization library for market data to facilitate exploratory analysis, which reduced the workflow of a data-processing project by one quarter.
- Examined time series and spectral-based SVM schemes on detecting large volatility fluctuation. Researched the optimal model complexity and implemented library to indicate on/off of automatic trading system based on market volatility.

Research Experience

Optimized Design of Composite Microelectronic Devices *UIUC, Jan 2014 - May 2017*

Built simulation package based on novel adaptive geometrical mapping for the failure process of thin film in electronic devices. Improved the speed by 5x by implementing distributed and parallel schemes. Used simulation results to augment limited experimental results and developed deep neural network to optimize design metrics of composites.

Optimization of Random/Patterned Surface *UIUC, Aug 2011 - Jan 2014*

Performed analysis on composites surfaces with random and patterned roughness data and identified the key roughness components via regression and spectral methods. Created meso-scopic model and built connection between known microscopic and macroscopic properties. Optimized the surface distribution and pattern for targeted metrics.