Yanjie Tong

Shanghai, China
+86 15221087914 ⋄ tyj20010914@gmail.com

EDUCATION

Tsinghua University Sep. 2020 - Now
Weiyang College, Bachelor in Mathematics and Physics + Energy and Power Engineering
GPA: 3.94/4.00, Rank: 5/44
English: TOEFL 112 (S 24) ; GRE 159 + 170 + 4.0
Skills: C++, Python, R, Matlab, Java, MySQL

SELECTED COURSEWORK

Engineering Mechanics	A+	Probability and Stochastic Processes	A
Fluid Mechanics	A	Statistical Inference	A
Fundamentals of Control Engineering	A-	Applied Time Series Analysis	A
Numerical Analysis	A-	Linear Regression Analysis	A
Mathematical Physics Equations	A	Multivariate Statistical Analysis	A-
Data Structures	A	Introduction to Data Science	A
Modern Operating Systems	A-	Introduction to Artificial Intelligence	A

SCHOLARSHIPS AND AWARDS

The Chinese Mathematics Competitions (CMC) Final, First Prize, National 3rd Place 2023
Scholarship of Academic Excellence, Tsinghua University 2021 and 2022
Alibaba Global Mathematics Competition, Finalist 2022
Chinese Physics Olympiad, Provincial Second Prize 2018 and 2019
Chinese Mathematical Olympiad, Provincial First Prize 2018

RESEARCH EXPERIENCE

Physics-informed Clustered Gaussian Process (picGP) Surrogate Model for Flow and Combustion Modelling Aug. 2023 - Now
Advisor: Xingjian Wang, Associate Professor, Department of Energy and Power Engineering, Tsinghua
Chih-Li Sung, Assistant Professor, Department of Statistics and Probability, MSU
· Proposed picGP emulator with proper parameterization and justification of Uncertainty Quantification
· Revealed underlying clustering structures via Variational Inference for Dirichlet Process mixture model
· Yielded better prediction results than its competitors, e.g., iGP, pcaGP
· Submitted the paper based on this work to *Proceedings of the Combustion Institute*

Machine-learning Based Surrogate Model for Mixing and Combustion Jun. 2023 - Now
Advisor: Xingjian Wang
· Trained a fast and accurate surrogate model based on POD and Kriging
· Outperformed other ML methods, such as KNN, DNN, SVR, in prediction accuracy

Gaussian Process Subspace Prediction for Nonlinear Model Reduction Sep. 2022 - Sep. 2023
Advisor: Xingjian Wang & Ruda Zhang, Assistant Professor, the Uncertainty Quantification Lab, UH
· Compared reduced-order models and hyperreduction methods for nonlinear flow field problems
· Developed a Python solver for 1D problem governed by Burgers' Equation based on Finite Volume Method
· Applied Gaussian Process Subspace Regression to predict POD Basis over the parameter space

COURSE PROJECTS

Analysis of Bike Sharing System in Washington D.C. Jun. 2023
· Performed EDA, Factor Analysis, Clustering and Multiple Linear Regression in R

Implementation of GraphSAGE Jun. 2023
· Applied supervised GraphSAGE to three datasets for classification

Neural Radiation Field Data Structure Optimization Jan. 2023
· Rendered high-resolution image and 3D geometry with trained Neural Radiation Field
· Reduced computational cost and storage with Virtual Rendering and Hashing

Short-term Wind Power Forecasting Jan. 2023
· Yielded accurate short-term prediction based on ARIMAX, LSTM and XGBoost

Management System for University Soccer League Dec. 2022
· Developed a simple application including basic database operations with a user-friendly interface

Image Hashing Nov. 2022
· Performed Perceptual Hashing based on Discrete Cosine Transform to identify similar images

Railway Passenger Traffic and Passenger-kilometers Forecasting May 2022
· Yielded accurate monthly prediction with Seasonal ARIMA model based on R

PROFESSIONAL EXPERIENCE

Harbin Electric Machinery Company Limited Jun. 2023 - Jul. 2023
Summer Intern, New Product Engineering Department
· Worked on **Database Construction in Big Data Management System**
· Constructed a Knowledge Graph Database based on Neo4j
· Implemented Algorithm for Inference-based Fault Detection and Diagnosis in Python

LEADERSHIP AND ACTIVITIES

Harvard Summit for Young Leaders in China (HSYLC) | Chinese Seminar Leader Aug. 2023
Beijing, China
· One of the Youngest Chinese Seminar Leaders
· Led a bilingual Seminar: **Data Science Thinking Mode and Power Engineering Applications**
· Instructed talented high school students in Capstone Projects concerning Data Science

Study Monitor Sep. 2022 - Jun. 2023
Tsinghua University

OTHER INTERESTS

Singing, Violin, Soccer, Billiards