

Yanjie Tong

Shanghai, China

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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

Fluid Mechanics	A	Applied Time Series Analysis	A
Numerical Analysis	A-	Linear Regression Analysis	A
Mathematical Physics Equations	A	Multivariate Statistical Analysis	A-
Data Structures	A	Intro to Nonparametric Statistics	A-
Modern Operating Systems	A-	Intro to Data Science	A
Probability and Stochastic Processes	A	Intro to Artificial Intelligence	A
Statistical Inference	A	Machine Learning	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

Region-optimal Gaussian Process (roGP) Surrogate Model via Dirichlet Process for Cold-flow and Combustion Emulations

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 roGP 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
- Introduced a new method combining tensor decomposition and interpolation to improve scalability

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