

JIANNAN JIANG

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Education

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- Carnegie Mellon University**, Pittsburgh, PA 2019 – now
- Ph.D. Candidate in Department of Mathematics, Analysis Group. (Expected graduation: May 2025)
 - Advisor: Prof. [Hayden Schaeffer](#), Prof. Noel Walkington, GPA 3.97/4.00.
- University of California, Berkeley**, Berkeley, CA 2017 - 2019
- Applied Mathematics and Computer Science, B.A.
 - Graduated with the highest honors in Applied Mathematics
 - Graduated with the high distinction in general scholarship, GPA: 3.91/4.00
- University of California, Davis**, Davis, CA 2015 - 2017

Researches

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- Stability and Convergence of HDG Schemes** Joint Work with Yukun Yue, Noel Walkington
- Though Hybridizable Discontinuous Galerkin Method (HDG) has been popular for more than a decade, the stability of the method for nonsmooth underlying solutions is missing in the literature due to the hybridizable nature of the methods. We managed to prove the stability of the method with least expected regularity, and proved the convergence of the method under nonlinear settings.
- Sampling theory for discretization-invariant learning Joint Work with Zecheng Zheng, Hayden Schaeffer
- Developed universal approximation theorems for discretization-invariant operator learning. Performed numerical experiments that illustrate significant improvements in accuracy and efficiency compared to discretization-variant methods.

Work Experience and Programming Projects

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- TuSimple: Research Engineer Intern 05/2022 - 08/2022
- *State Estimation, Probabilistic Inference, Deep Learning*
 - Explored innovative set-based object-tracking methods on real-world datasets, mentored by Hao Wu.
 - Implemented a set-based tracker (a variant of the Kalman filter) to track and estimate motion concurrently.
 - With per-frame detection results from upstream, formulated the multi-target tracking problem in a deep learning framework, designed the training pipeline, and trained models to provide accurate, robust estimations of velocity and acceleration for all objects over a domain.
- High-performance multi-tier cloud web service 03/2022 - 05/2022
- Led a semester-long graduate course project with two master students, delivered best performing services among 67 participating teams at CMU. ([Presentation Slide](#))
 - Deployed a scalable, failure-tolerant web service tier and storage tier using a self-managed Kubernetes cluster on AWS for QR Code parsing, Blockchain Transaction logging, and Twitter data analytics retrieval.
 - Contributed the majority of the query processing baseline, profiled the processing pipeline for the best CPU and disk-read workload, restructured data, and designed an efficient data schema in MySQL for better query performance, beating the benchmark (for a full course grade) by 312% on average.
 - Related tools used: Maven (mvn), Helm, Kubernetes, kOps, MySQL, AWS EC2, AWS S3

Skills And Achievements

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- Honorable Mention Team in Putnam Math Competition 12/2017
- One of the three team members in the Berkeley team for Putnam Math Competition, the most prestigious college level math competition in the U.S.
 - Ranked 122 among 4638 students who participated. UC Berkeley team placing 7th out of 464 teams.

Programming Languages Languages

Python = MATLAB > C/C++ = Java
Chinese, English (GRE: 161V, 170Q, 5.0W)