JUCHENG SHEN

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Google Scholar | GitHub

EDUCATION

expected 5/2027 **Rice University** **Houston, TX**
B.A. in Computer Science, Mathematics, and Mathematical Economic Analysis
GPA: 3.70/4.00 (CS & Math: 3.75)
Relevant coursework: Reinforcement Learning, Computer Vision, Honors Linear Algebra, Honors ODE, Real Analysis, Differential Geometry, Abstract Algebra, Advanced Algorithms and Data Structures

PUBLICATIONS

1. **Jucheng Shen***, Barbara Su*, Anastasios Kyrillidis
One Model, Two Roles: Emergent Specialization in a Shared Recurrent Transformer
Advances in Neural Information Processing Systems (**NeurIPS 2026**)
paper | code | blog
2. **Jucheng Shen**, Gaurav Sarkar, Yeonju Ro, Sharath Nittur Sridhar, Zhangyang Wang, Aditya Akella, Souvik Kundu
Improving the Throughput of Diffusion-based Large Language Models via a Training-Free Confidence-Aware Calibration
Findings of the Association for Computational Linguistics (**Findings of ACL 2026**)
paper | code | blog
3. **Jucheng Shen**, Yeonju Ro
Beyond Static Cutoffs: One-Shot Dynamic Thresholding for Diffusion Language Models
NeurIPS 2025 Efficient Reasoning Workshop
paper | code
4. Boya Zeng, Tianze Luo, Shu Pu, **Jucheng Shen**, Taiming Lu, Gabriel Sarch, Zhuang Liu
i1: A Simple and Fully Open Recipe for Strong Text-to-Image Models
NeurIPS 2026 BeNTo Workshop
paper | code | data | project page
5. Fanjiang Ye, Zepeng Zhao, Yi Mu, **Jucheng Shen**, Renjie Li, Kaijian Wang, Saurabh Agarwal, Myungjin Lee, Triston Cao, Aditya Akella, Arvind Krishnamurthy, T. S. Eugene Ng, Zhengzhong Tu, Yuke Wang
HyperGen: Empowering Ultra-high-resolution Video Generation Framework with Sketch-Tile Collaboration
ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (**PPoPP 2027**)
paper

RESEARCH EXPERIENCE

5/2026 – 8/2026 ***Research Intern*, California Institute of Technology** **Pasadena, CA**
- Advisor: **Prof. Anima Anandkumar**.
- Investigated how the spectral structure of continuous language representations affects learning efficiency and generalization in diffusion language models.
- Led the project, developed spectral regularization and attenuation methods, and trained and evaluated models on language modeling, length generalization, translation, and summarization.

1/2026 – 9/2026 ***Research Intern*, Rice University** **Houston, TX**
- Advisor: **Prof. Anastasios Kyrillidis**.
- Studied how asymmetric input injection enables a shared-weight recurrent Transformer to develop distinct computational roles for reasoning.
- Proposed *Asymmetric Input Recurrence (AIR)* and designed ablation and representation analyses, showing that a clear state-identity signal can induce functional specialization and improve performance on selected abstract reasoning tasks.

11/2025 – 2/2026 ***Research Intern*, Princeton University** **Remote**

- Advisor: **Prof. Zhuang Liu**.
- Developed *i1*, a fully open text-to-image model trained from scratch, with systematic exploration of data, architecture, and training choices.
- Built the dataset selection and filtering pipeline and ran about 60 of the project's 300+ ablations, studying how individual datasets, data mixtures, and high-resolution data affect the model.

5/2025 – 9/2025 ***Research Intern*, UT Austin & Intel Labs** **Remote**

- Advisors: **Prof. Atlas Wang** & **Dr. Souvik Kundu**.
- Developed training-free adaptive decoding methods that improve diffusion language model throughput while maintaining generation quality.
- Proposed *OSDT* and led the development of *CadLLM*, designing adaptive decoding strategies and conducting experiments that demonstrated throughput gains of 24–50% and up to 2.3×, respectively.

4/2025 – 8/2025 ***Research Intern*, Rice University** **Houston, TX**

- Advisor: **Prof. Yuke Wang**.
- Developed *HyperGen*, a system for generating 2–4K videos through low-resolution generation, upscaling, and tiled refinement without fitting the full-resolution video on a single GPU.
- Implemented *HyperGen* on two baselines, conducted end-to-end evaluations and ablation studies, and contributed figures and manuscript text.

TEACHING EXPERIENCE

1/2026 – present ***Teaching Assistant*, Rice University**
COMP 282: Computational Optimization of AI

ACADEMIC SERVICE

Reviewer

- NeurIPS 2025 Efficient Reasoning Workshop
- COLM 2026 Efficient Reasoning Workshop

LEADERSHIP EXPERIENCE

4/2025 – 10/2025 ***Board Member (Tracks and Workshops)*, HackRice**

- Co-designed and shipped the official starter code used by 500+ hackers, and designed competition tracks and judging criteria for HackRice 15.
- Hosted 2 technical workshops for 100+ attendees; ran Q&A and live coding demos.

9/2023 – 9/2024 ***Vice President and President*, Rice Chinese Theater Club**

- Led a team of 30+ members in organizing semester productions, coordinating venues, licensing, sets and props, publicity, and budgeting.
- Performed in three different plays with a combined audience of over 1,000 across all performances, and represented the club at quarterly meetings of the North American College Chinese Theater Alliance.

HONORS & AWARDS

2026 **Caltech Summer Undergraduate Research Fellowship (SURF)**
California Institute of Technology

2023 **Frank Liu Jr. Prize for Creative Innovations in Music, Fashion, and the Arts**
Napier Rice Launch Challenge 2023