

# Peiyang Song

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📄 <https://peiyang-song.github.io/>

## Education

6/2026 **California Institute of Technology** Pasadena, CA  
*B.S. in Computer Science & Minor in Robotics*  
Advisors: Prof. Steven Low & Prof. Günter Niemeyer. GPA: **4.2/4.0**

## Research Interests

Machine Learning · Natural Language Processing · Automated Reasoning · Neuro-Symbolic AI

## Work Experience

6/2024 – Present **Stanford University** Palo Alto, CA  
*Researcher @ Stanford AI Lab (SAIL) and Computation & Cognition Lab*  
Advisors: Prof. Noah Goodman (Stanford), Gabriel Poesia (Stanford)

2/2023 – Present **California Institute of Technology** Pasadena, CA  
*Research Fellow @ Anima AI+Science Lab*  
Advisors: Prof. Anima Anandkumar (Caltech), Dr. Kaiyu Yang (Meta)

11/2022 – 6/2024 **University of California, Santa Barbara** Santa Barbara, CA  
*Researcher @ Computer Architecture Lab (ArchLab)*  
Advisors: Prof. Timothy Sherwood (UCSB), Dr. Jeremy Lau (Google)

## Selected Publications

Preprint **Towards Large Language Models as Copilots for Theorem Proving in Lean**  
Peiyang Song, Kaiyu Yang, Anima Anandkumar  
*NeurIPS Mathematical Reasoning and AI (MATH-AI) Workshop, 2023*

Preprint **Temporal Activation and Real-Soft-Max Functions**  
Peiyang Song, Rhys Gretsches, Jeremy Lau, and Timothy Sherwood

*In submission, manuscript available upon request*

- EMNLP 2024 **Creative and Context-Aware Translation of East Asian Idioms with GPT-4**  
Kenan Tang\*, Peiyang Song\*, Yao Qin, Xifeng Yan (\* Equal Contribution)  
*Findings of Empirical Methods in Natural Language Processing (EMNLP), 2024*
- EMNLP 2024 **In-Context Learning May Not Elicit Trustworthy Reasoning: A-Not-B Errors in Pretrained Language Models**  
Pengrui Han\*, Peiyang Song\*, Haofei Yu, Jiaxuan You (\* Equal Contribution)  
*Findings of Empirical Methods in Natural Language Processing (EMNLP), 2024*
- ASPLOS 2024 **Energy Efficient Convolution with Temporal Arithmetic**  
Rhys Gretsch, Peiyang Song, Advait Madhavan, Jeremy Lau, Timothy Sherwood  
*ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2024*
- NeurIPS 2023 **LeanDojo: Theorem Proving with Retrieval-Augmented Language Models**  
Kaiyu Yang, Aidan Swope, Alex Gu, Rahul Chalamala, Peiyang Song, Shixing Yu, Saad Godil, Ryan Prenger, Anima Anandkumar  
*Neural Information Processing Systems (NeurIPS), 2023, Oral presentation*

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## Awards & Honors

- 8/2023 **Early Research Scholarship**
- 4/2023 **Caltech SURF award**
- 9/2022 **UCSB Creative Studies Honors**

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## Selected Media

- 2024 **Mathematicians' Newest Assistants Are Artificially Intelligent**  
*Scientific American*
- 2024 **LeanAgent: The First Life-Long Learning Agent for Formal Theorem Proving in Lean**  
*MarkTechPost*
- 2024 **Lean Copilot: An AI Tool that Allows Large Language Models (LLMs) to be used in Lean for Proof Automation**  
*MarkTechPost*

2023 **Can LLMs Generate Mathematical Proofs that can be Rigorously Checked?**  
*MarkTechPost*

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## Languages

Programming Python, C++, Lean 4, Java, C, PASCAL, OCaml, C#  
Natural English (TOEFL 117/120), Mandarin (Native)

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## Invited Talks & Tutorials

**Tutorial: Neuro-Symbolic Theorem Proving with Lean**

9/2024 3rd Neuro-Symbolic AI Summer School (NSSS)

**Towards An AI Mathematician**

12/2023 UC Santa Barbara NLP Lab  
11/2023 CCS Research & Creative Activities Conference (RACA-CON)  
8/2023 Caltech SURF Seminar Day

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## Academic Services

**Reviewer** Conference on Neural Information Processing Systems (NeurIPS)  
International Conference on Learning Representations (ICLR)  
NeurIPS Mathematical Reasoning and AI (MATH-AI) Workshop  
NeurIPS Workshop on Behavioral Machine Learning  
ICML Workshop on LLMs and Cognition