Stefan Stojanov

Education

2017–2023 **PhD in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA
Advisor: James Rehg
Committee: James Hays, Judy Hoffman, Subhransu Maji, Chen Yu
Thesis: Shape-Biased Representations for Object Category Recognition

2013–2017 **B.A. in Computer Science & Mathematics**, *Bard College*, Annandale, NY

Research Experience

2024–present **Stanford University**, *Postdoctoral Scholar, Department of Computer Science*
Working with Prof. Jiajun Wu and Prof. Dan Yamins.
Led two research projects from concept to submission at top-tier venues, managing teams of junior researchers. Contributed as co-first author to three paper submissions.

Self-supervised Learning to Extract Motion from Video Foundation Models
- Developed a learnable visual prompting technique that advanced counterfactual world models from proof of concept to state-of-the-art in motion estimation.

Distilling Object Shape and Function Knowledge from Vision Language Models
- Developed a self-supervised method to discover dense functional object correspondence.

Summer 2021 **Meta Reality Labs**, *Research Scientist Intern*
Working with Dr. Abhishek Sharma and Dr. Sachin Talathi
Improving slip robustness in head-mounted eye tracking by fusing 2D and 3D signals.

Fall 2018, Summer 2019 **Amazon Lab 126**, *Applied Scientist Intern*
Working with Dr. Ambrish Tyagi
Action recognition and unsupervised 3D human object pose estimation.

2017–2023 **PhD Student Researcher**, *Georgia Institute of Technology, College of Computing*
Working with Prof. James Rehg
Led research on low-shot learning, self-supervised learning, and 3D object shape reconstruction.

Awards and Honors

2024 **HAI Postdoctoral Fellowship**
One year of funding from Stanford's Human-centered AI institute.

2024 **HAI Compute Award**
$85K Azure credits awarded to selected project proposals.

2021 **Top Reviewer - International Conference on Machine Learning (ICML)**
Awarded to the top 10% of reviewers.

2019 **Best Paper Finalist at CVPR - Computer Vision and Pattern Recognition**
45 papers from 5,165 submissions – top 0.1% of submitted papers.

2017 **Dr. Richard M. Siegel Memorial Prize in Science**
Awarded to one graduating student at Bard College for academic excellence in science.

Publications and Preprints

Preprints

1. The BabyView Dataset: High-resolution Egocentric Videos of Infants' and Young Children's Everyday Experiences
   Bria Lorelle Long*, Violet Xiang*, **Stefan Stojanov***, Robert Z. Sparks, Zi Yin, Grace Keene, Alvin Wei Ming Tan, Steven Y. Feng, Auddithio Nag, Chengxu Zhuang, Virginia A. Marchman, Daniel LK Yamins, Michael Frank
   `https://arxiv.org/abs/2406.10447`

Publications

2. 3×2: 3D Object Part Segmentation by 2D Semantic Correspondences
   Anh Thai, Weiyao Wang, Hao Tang, **Stefan Stojanov**, James M Rehg, Matt Feiszli
   In European Conference of Computer Vision (ECCV) 2024
   `https://arxiv.org/abs/2407.09648`
3. ZeroShape: Regression-based Zero-shot Shape Reconstruction
   Zixuan Huang*, **Stefan Stojanov***, Anh Thai, Varun Jampani, James M Rehg
   In Computer Vision and Pattern Recognition (CVPR) 2024
   `https://arxiv.org/abs/2312.14198`
4. Low-shot Object Learning with Mutual Exclusivity Bias
   Ngoc Anh Thai, Ahmad Humayun*, **Stefan Stojanov***, Zixuan Huang, Bikram Boote, James Matthew Rehg
   In Neural Information Processing Systems - Datasets & Benchmarks (NeurIPS) 2023
   `https://arxiv.org/abs/2312.03533`
5. ShapeClipper: Scalable 3D Shape Learning from Single-View Images via Geometric and CLIP-based Consistency
   Zixuan Huang, Varun Jampani, Anh Thai, Yuanzhen Li, **Stefan Stojanov**, James M. Rehg
   In Computer Vision and Pattern Recognition (CVPR) 2023
   `https://arxiv.org/abs/2304.06247`
6. The Benefits of Depth Information for Head-Mounted Gaze Estimation
   Stefan Stojanov, Sachin S Talathi, Abhishek Sharma
   In Eye Tracking Research and Applications (ETRA) 2022
   `acm:3517031.3529638`
7. Learning Dense Object Descriptors from Multiple Views for Low-shot Category Generalization
   Stefan Stojanov, Anh Thai, Zixuan Huang, James M. Rehg
   In Neural Information Processing Systems (NeurIPS) 2022
   `https://arxiv.org/abs/2211.15059`
8. Planes vs. Chairs: Category-guided 3D shape learning without any 3D cues
   Zixuan Huang, **Stefan Stojanov**, Anh Thai, Varun Jampani, James M. Rehg
   In European Conference of Computer Vision (ECCV) 2022
   `https://arxiv.org/abs/2204.10235`

9. The Surprising Positive Knowledge Transfer in Continual 3D Object Shape Reconstruction
   Anh Thai, **Stefan Stojanov**, Zixuan Huang, Isaac Rehg, James M Rehg
   In International Conference on 3D Vision (3DV) 2022 - Oral
   `https://arxiv.org/abs/2101.07295`
10. 3D Reconstruction of Novel Object Shapes from Single Images
    Anh Thai, **Stefan Stojanov**, Zixuan Huang, Isaac Rehg, James M Rehg
    In International Conference on 3D Vision (3DV) 2021
    `https://arxiv.org/abs/2006.07752`
11. Using Shape to Categorize: Low-Shot Learning with an Explicit Shape Bias
    Stefan Stojanov, Anh Thai, James M Rehg
    In Computer Vision and Pattern Recognition (CVPR) 2021
    `https://arxiv.org/abs/2101.07296`
12. Incremental Object Learning from Contiguous Views
    Stefan Stojanov, Samarth Mishra*, Anh Thai*, James M Rehg
    In Computer Vision and Pattern Recognition (CVPR) 2019
    Oral Presentation - **Best Paper Finalist - 45 papers from 5,165 submissions**
    `CVF Open Access URL`
13. Unsupervised 3d Pose Estimation with Geometric Self-supervision Views
    Ching-Hang Chen, Ambrish Tyagi, Amit Agrawal, Dylan Drover, Rohith MV, **Stefan Stojanov**, James M. Rehg
    In Computer Vision and Pattern Recognition (CVPR) 2019 - Oral Presentation
    `https://arxiv.org/abs/1904.04812`

Posters and Talks

November 2024 Self-supervised Learning of Motion Concepts by Optimizing Counterfactuals
Lightning talk and poster
Google Workshop on Theory and Practice of Foundation Models

February 2023 University of California San Diego - Research presentation

January 2023 Brown University - Research Presentation

January 2023 Stanford University - Research presentation

January 2023 Columbia University - Research presentation

July 2022 Instance to category generalization: A self-supervised model inspired by infant learning
Poster at International Congress of Infant Studies (ICIS2022)

July 2020 The success of continual machine learning in an infant-inspired setting
Poster at Virtual International Congress of Infant Studies (vICIS2020)

Professional Activities

Reviewing

Computer Vision and Pattern Recognition (CVPR)	*'20, '21, '22, '23, '24*
Neural Information Processing Systems (NeurIPS)	*'20, '21, '22*
International Conference of Machine Learning (ICML)	*'21 (top 10%), '22, '23, '24*
International Conference of Computer Vision (ICCV)	*'21*
International Conference on Learning Representations (ICLR)	*'24*

Organization

2022 Developmental Machine Learning: From Human Learning to Machines and Back
Dagstuhl Workshop - Student volunteer for seminar organization - webpage

Mentorship

David Wendt, *Stanford MS → Global Liquid Markets SWE*

Linan (Frank) Zhao, *Stanford MS*, Stanford MS → Meta SWE

Seungwoo (Simon) Kim, *Stanford BS*

Auddithio Nag, *Stanford BS*

Johnathan Xie, *Stanford BS*

Anh Thai, *Georgia Tech BS → Georgia Tech PhD Student*

Samarth Mishra, *Georgia Tech MS → Boston University PhD Student*

Skills

Programming languages: Python, MATLAB, C, C++, Bash, Java

Tools: Pytorch, Blender, Unity, OpenCV, NumPy, Trimesh, AWS, GCP, Azure, SLURM