

Sayan Deb Sarkar

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EDUCATION

Since 2024 PhD in 3D Computer Vision, *Stanford University*, United States
Advised by [Prof. Iro Armeni](#), Gradient Spaces Research Group.

2022 - 2024 MSc in Computer Science, *ETH Zürich*, Switzerland
Advised by [Prof. Marc Pollefeys](#), Computer Vision And Geometry Group. GPA: 5.48/6.0

2016 - 2020 B.Tech in Information Technology, *Manipal Institute of Technology*, India
Relevant Coursework: Data Structures, Operating Systems. GPA: 9.16/10.0 \approx top 1%

EXPERIENCE

- Summer 2025 Research Scientist Intern at **Microsoft Spatial AI Lab, Zurich**, Switzerland
Designed a scalable and efficient tokenization method for Video LLMs using codec information to enable longer context and faster video understanding.
Mentor: Prof. Marc Pollefeys
- Autumn 2023 Research Intern at **Qualcomm XR Labs, Amsterdam**, Netherlands
Optimized SLAM algorithms for real-time performance for extended reality applications & improved tracking in adversarial scenarios.
Mentor: Dr. Marco Manfredi
- 2022 - 2024 Research Student at **CVG, ETH Zürich, Zürich**, Switzerland
3D scene graph alignment in static and dynamic environments, leverage the graph matching to enable embodied agent tasks like map reuse, 3D localization and registration.
Supervisor: Dr. Dániel Béla Baráth, Dr. Ondrej Miksik & Prof. Iro Armeni
- 2021 - 2022 Computer Vision Research Engineer at **Mercedes-Benz R & D, Bangalore**, India
Developed deep learning models for driver monitoring and head position estimation in multi-purpose camera systems for the Maybach S-Class under the Interior Assist program.
- 2020 - 2021 Research Engineer at **ICG, TU Graz, Graz**, Austria
Joint 3D hand + object pose estimation in close interaction scenarios and indoor 3D scene understanding estimation using Monte Carlo Tree Search on noisy RGB-D scans.
Supervisor: Dr. Shreyas Hampali, Dr. Mahdi Rad & Prof. Vincent Lepetit

PUBLICATIONS

- [8] CoPE-VideoLM: Codec Primitives For Efficient Video Language Models, *under review 2025*.
Sayan Deb Sarkar, Rémi Pautrat, Ondrej Miksik, Marc Pollefeys, Iro Armeni, Mahdi Rad*, and Mihai Dusmanu*
- [7] GuideFlow3D: Optimization-Guided Rectified Flow For Appearance Transfer, *in NeurIPS 2025*.
Sayan Deb Sarkar, Sinisa Stekovic, Vincent Lepetit, and Iro Armeni
[\[Paper\]](#) [\[Project Page\]](#)
- [5] CrossOver: 3D Scene Cross-Modal Alignment, *in CVPR 2025* [Highlight, top 3%].
Sayan Deb Sarkar, Ondrej Miksik, Marc Pollefeys, Dániel Béla Baráth, and Iro Armeni
Featured: [Open Robotics](#).
[\[Paper\]](#) [\[Project Page\]](#)
- [4] SGAligner: 3D Scene Alignment with Scene Graphs, *in ICCV 2023*.
Sayan Deb Sarkar, Ondrej Miksik, Marc Pollefeys, Dániel Béla Baráth, and Iro Armeni
Featured: [Computer Vision News](#), [Learn OpenCV Blog](#).
[\[Paper\]](#) [\[Project Page\]](#)

- [3] Keypoint Transformer: Solving Joint Identification in Challenging Hands and Object Interactions for Accurate 3D Pose Estimation, *in CVPR 2022* [Oral, top 4.1%].
Shreyas Hampali, Sayan Deb Sarkar, Mahdi Rad, and Vincent Lepetit
[\[Paper\]](#) [\[Project Page\]](#)
- [2] Monte Carlo Scene Search For 3D Scene Understanding, *in CVPR 2021*.
Sinisa Stekovic*, Shreyas Hampali*, Sayan Deb Sarkar, Chetan Srinivasa Kumar, Friedrich Fraundorfer, and Vincent Lepetit
[\[Paper\]](#) [\[Project Page\]](#)
- [1] General 3D Room Layout from a Single View by Render-And-Compare, *in ECCV 2020*.
Sinisa Stekovic, Shreyas Hampali, Mahdi Rad, Sayan Deb Sarkar, Friedrich Fraundorfer, and Vincent Lepetit
[\[Paper\]](#) [\[Project Page\]](#)

PATENTS

- [B] Efficient Video Tokenization for Multi-modal Models
US patent, filed in 2025, by Microsoft.
- [A] Learned Occlusion Modeling For Simultaneous Localization and Mapping
US patent, filed in 2024, by Qualcomm. [\[Patent Link\]](#)

INVITED TALKS

2025 Scalable Cross-Modal 3D Scene Understanding. *Google XR Research & Imagine Labs, ENPC ParisTech.*

ACADEMIC SERVICES

Reviewing CVPR, ECCV, ICCV, NeurIPS, ICRA
Organization CV4AEC Workshop@CVPR ('23 & '24)

TEACHING

Winter 2025 Computer Vision For The Built Environment [\[Course Website\]](#)

TECHNICAL SKILLS

Programming Python, C++, Java, JavaScript
Tools Pytorch, Tensorflow, Blender, OpenCV, mySQL, Node.js, Django, mongoDB

EXTRA CURRICULAR

- 2022 Co-founder, [CORD.ai](#)
Built and led a core team of 14 to establish a 350+ member community focused on democratizing AI, reducing barriers for young independent researchers, and fostering collaboration.
- 2020 Technical Head, [defeatCOVID](#)
Non-profit organisation, aimed at tracking the spread of COVID-19 using a mobile-based heat map interface.