Shreyas Sachan

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Education

Universität des Saarlandes, Germany **April 2022 – Present (Expected: April 2026)**

Master of Science - Visual Computing

- **Master Thesis:** 3D Mesh Reconstruction from a Single Event Camera
  Conducted at: Visual Computing and AI Department, Max Planck Institute for Informatics, Germany
  Advisors: Prof. Christian Theobalt and Dr. Vladislav Golyanik
- **Relevant Coursework:** High Level Computer Vision, Computer Vision and Machine Learning for Computer Graphics, 3D Object Representation and Reconstruction with Machine Learning, Computer Graphics, Image Processing & Computer Vision

Cluster Innovation Centre, University of Delhi, India **July 2016 – June 2020**

Bachelor of Technology - Information Technology and Mathematical Innovations

- **Bachelor Thesis:** Inferencing At Low-bit Resolution
  Conducted at: Department of Computer Science and Engineering, Indian Institute of Technology Delhi, India
  Advisor: Prof. Kolin Paul
- **Relevant Coursework:** Artificial Intelligence, Linear Algebra, Numerical Methods, Linear Programming

Research Experience

Max Planck Institute for Informatics (MPI-INF), Saarbrücken **Oct 2024 - Present**

Master's Thesis, Supervised by: Prof. Christian Theobalt & Dr. Vladislav Golyanik *Saarbrücken, Germany*

- Developed EventNeuS, the first neural framework to extract high-quality 3D meshes solely from monocular event streams [1]
- Introduced SDF-based representations for event data along with spherical harmonics to improve reconstruction quality
- Outperformed previous state-of-the-art method with 34% lower Chamfer distance and 31% lower MAE(Mean Absolute Error)

DFKI - German Research Center for Artificial Intelligence, Saarbrücken **Dec 2024 - Nov 2025**

Research Assistant, TwinMaP Project *Saarbrücken, Germany*

- Trained and deployed Guided Motion Diffusion models on custom datasets for text-to-motion generation
- Enhanced 3D visualization pipeline for motion generation by extending aitviewer framework, enabling real-time preview of AI-generated animations
- Implemented gRPC-based streaming pipeline and agent simulation systems using AJAN/CARJAN frameworks for autonomous behavior modeling and cross-platform integration

Max Planck Institute for Informatics (MPI-INF), Saarbrücken **April 2023 - May 2024**

Research Assistant, Supervised by: Mohamed Elgharib *Saarbrücken, Germany*

- Designed and deployed a multi-view camera rig for high-precision 3D face and hand gesture capture
- Implemented camera calibration pipelines and 3D data processing workflows for face expression modeling
- Developed algorithms for synchronizing and processing multi-view visual data

Indian Institute of Technology (IIT), Delhi **Feb 2021 - Aug 2021**

Project Scientist, Supervised by: Prof. Srikanta Bedathur & Prof. Maya Ramanath *New Delhi, India*

- Extracted data (scanned PDFs and images) from the NHAI website using web-crawling techniques.
- Developed a hybrid OCR model (Pytesseract + Layout-Parser) for text extraction from scanned pdfs and images.
- Developed a search engine using the OCR model that enables text-based searching of documents in the database.
- The search engine is currently being used by the officials of NHAI

Indian Institute of Technology (IIT), Delhi **Nov 2020 - Jan 2021**

Project Scientist, Supervised by: Prof. Kolin Paul & Prof. Srikanta Bedathur *New Delhi, India*

- Developed a tweet extracting module which was part of the project Social Media Analysis.
- The python module extracted real-time tweets containing media files from Twitter.
- The module was used to track Twitter handle activity over the time & analyze its impact.

Indian Institute of Technology (IIT), Delhi **Jan 2020 - June 2020**

Bachelor's Thesis, Supervised by: Prof. Kolin Paul & Prof. Shobha Bagai *New Delhi, India*

- Built ResNet-18 neural network from scratch in PyTorch, achieving 86.78% accuracy on CIFAR-10 benchmark
- Designed and evaluated four distinct quantization algorithms to compress neural networks for efficient deployment on memory-constrained mobile devices
- Conducted comparative analysis of 4-bit and 8-bit precision quantization methods, optimizing accuracy-performance trade-offs for edge computing applications

Publications

1. **Shreyas Sachan**, Viktor Rudnev, Mohamed Elgharib, Christian Theobalt, and Vladislav Golyanik. EventNeuS: 3D Mesh Reconstruction from a Single Event Camera. In *International Conference on 3D Vision (3DV)*, 2026.

2. Kumar S., Sharma A.*, Reddy B.K.*, **Sachan S.***, Jain V.* & Singh J. An Intelligent Model Based on Integrated Inverse Document Frequency and Multinomial Naive Bayes for Current Affairs News Categorisation. In *International Journal of System Assurance Engineering and Management*, 2021. https://doi.org/10.1007/s13198-021-01471-7

Projects

ray-tracer | *C++* **Jan 2023**

- Implemented 3D ray-tracer with Monte Carlo path tracing, realistic lighting, shadows, and multi-threading support
- Integrated BRDF models and global illumination techniques for photorealistic rendering

Style Transfer: Madhubani Paintings | *Python, PyTorch* **July 2022**

- Implemented Gatys' neural style transfer algorithm for Madhubani Art using VGG-19 with total variational loss regularization
- Conducted ablation study on style scale parameters and loss weighting to optimize artistic feature preservation

Visual Perception for Visually Impaired | *Python, Robot Operating System, PCL* **April 2017**

- Developed 3D perception pipeline using RGBD data with point cloud segmentation and real-time object detection
- Created system translating 3D spatial information into audio descriptions (via Google text-to-speech) and haptic feedback (using external vibratory sensors)
- Won "Best Algorithm" award at e-Yantra Ideas Competition, IIT Bombay. [Video]

Technical Skills

Programming Languages: Python, C++, MATLAB, R

Computer Vision & Graphics: OpenCV, Open3D, SMPL Models, aitviewer, OpenGL, COLMAP, Point Cloud Library (PCL), Trimesh, Metashape, Diffusion Models, Text-to-Motion Generation

Machine Learning Frameworks: PyTorch, TensorFlow, Keras

Development Tools: Git, LaTeX, ROS (Robot Operating System), Blender, Unreal Engine, CARLA Simulator, gRPC

Data Processing: NumPy, Pandas, MATLAB

Honors and Awards

- **Best Algorithm Winner :** e-Yantra Ideas Competition, IIT Bombay (350+ teams), *2017*
- **All India Rank 6 :** Cluster Innovation Center entrance exam, University of Delhi (10000+ aspirants), *2016*
- **JENESYS 2.0 Fellowship :** Government of Japan Youth Exchange Programme (120 students selected), *2015*
- **President Scout Award :** Awarded by President of India, *2014*
- **Merit Certificate :** Awarded by Central Board of Secondary Education (CBSE) for outstanding performance (10 CGPA) in all subjects, *2015*

* Alphabetical or Equal Contribution