

Mohammad Sadil Khan

PhD in 3D Computer Vision

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👤 [Sadil Khan](#)

Objective

Seeking a research internship in 3D Reconstruction, Machine Perception, or Text-to-3D Generation. I am a first-year PhD student working on 3D Scene and Shape Understanding. My research interests are in 3D/4D reconstruction, Generative AI, and Parametric Shape Reconstruction for 3D designing.

Notable Publications

* *equally contributing first authors*

1. Sankalp Sinha*, **Mohammad Sadil Khan***, Muhammad Usama, Shino Sam, Didier Stricker, Sk Aziz Ali, Muhammad Zeshan Afzal. “MARVEL-40M+: Multi-Level Visual Elaboration for High-Fidelity Text-to-3D Content Creation”, **Under Review 2024**. [Preprint](#)
 - [Contributions](#).
 - **Largest 3D Captioning Dataset** with 40M+ annotations for 8M+ 3D assets.
 - **Multi-Level Annotation Pipeline** with **Domain-Specific Information**.
 - **Two-stage pipeline** for high-fidelity and fast text-to-3D generation.
2. **Mohammad Sadil Khan***, Sankalp Sinha*, Sheikh Talha Uddin, Didier Stricker, Sk Aziz Ali, Muhammad Zeshan Afzal. “Text2CAD: Generating Sequential CAD Models from Beginner-to-Expert Level Text Prompts”, **NeurIPS 2024 (Spotlight)**. [Preprint](#). | [Project Page](#).
 - [Contributions](#).
 - **First AI framework** to generate 3D CAD designs from text descriptions.
 - A **novel, automatic data annotation pipeline** for multi-level text description generation.
 - A SOTA **end-to-end auto-regressive network** for text to CAD design generation.
3. **Mohammad Sadil Khan**, Elona Dupont, Sk Aziz Ali, Kseniya Cherenkova, Anis Kacem, Djamila Aouada, “CAD-SIGNet: CAD Language Inference from Point Clouds using Layer-wise Sketch Instance Guided Attention”, **CVPR 2024 (Highlight)**. [Paper](#) | [Project Page](#) | [Video](#).
 - [Contributions](#).
 - A SOTA **end-to-end auto-regressive network** for 3D CAD model generation from point cloud.
 - **Sketch Instance Guided Attention** for region-based cross-attention.

Education

RPTU Kaiserslautern

PhD in 3D Computer Vision

Kaiserslautern, Germany

Feb 2024-Present

University Jean Monnet & KU Leuven

Masters of Science in Machine Learning and Data Mining

Saint-Etienne, France

Sep 2020-Jul 2022

Chennai Mathematical Institute

Masters (M1) in Data Science

Siruseri, India

Aug 2019-Jul 2020

Ramakrishna Mission Residential College

Bachelors in Mathematics

Kolkata, India

July 2016-May 2019

Experience

Augmented Vision Lab, DFKI

Kaiserslautern, Germany

Research Assistant (*Hiwi*)

Feb 2024 - Present

- Design and implement innovative algorithms for AI-enhanced CAD modeling.
- Explore and establish cutting-edge research directions in Text-to-3D model generation.
- Help the research team with experimental analysis, providing technical support and collaborative discussions.

CVI2 Group

Kirchberg, Luxembourg

Student Researcher

Jan 2023 - Feb 2024

- Design novel algorithms for the Scan2CAD project.
- Developed CAD-SIGNet, a novel vision-language architecture for CAD language inference from point cloud.
- Served as a technical committee member for SHARP workshop in ICCV 2023.

Creatis, INSA Lyon

Lyon, France

Research Intern

Feb 2022 - Jul 2022

- Developed a novel 3D medical image segmentation approach using point clouds.
- Modified RandLa-Net with a feature extraction layer.
- Results demonstrated superior performance on multi-class and binary segmentation tasks for organs in the Visceral dataset.

Skills

- **Architecture:** VLM-LLM Inference, Transformers, Diffusion Model, Stable Diffusion, LORA.
- **Library:** PyTorch, Pytorch-Lightning, Pytorch3D, vLLM, Blender Python.
- **Programming:** Python, R, Julia, Java, Swift.
- **Interpersonal:** Creative and Independent Thinking, Collaborative Research, Problem Solving, Quick and Adaptive Learner.

International Workshops

- Technical Committee Member of SHape Recovery from Partial Textured 3D Scans, (**SHARP**) Workshop. In IEEE International Conference on Computer Vision (ICCV) 2023.

Awards & Scholarships

- **BRMI Regional Scholarship** (2020-2021) and **Erasmus Scholarship** (2021-2022), France.
- **Charpak BCS Scholarship**, 2020-2021, India.
- **DST Inspire Scholarship** (top 1% nationally), India.

Languages

English (C1) French (A2) Hindi (C2) Bengali (Native)