# Mohammad Sadil Khan

PhD Researcher in 3D Computer Vision & Generative AI

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Final-year PhD student at RPTU Kaiserslautern & DFKI, Germany, supervised by Prof. Didier Stricker. Research focuses on 3D Reconstruction, 3D Generative AI, and Parametric Shape Modeling for design and editing workflows.

## PUBLICATIONS

**CVPR 2024 ★ Highlight • Rank 1 Vision Conference • Acceptance ∼25% • Highlight < 3%**

**CAD-SIGNet: CAD Language Inference from Point Clouds using Layer-wise Sketch Instance Guided Attention**

**Mohammad Sadil Khan**, et al.

*A SOTA architecture with a novel masked attention mechanism for generating 3D CAD models from point clouds.*

arXiv | Website

**NeurIPS 2024 ★ Spotlight • Rank 1 AI Conference • Acceptance ∼22% • Spotlight < 3%**

**Text2CAD: Generating Sequential CAD Models from Beginner-to-Expert Level Text Prompts**

**Mohammad Sadil Khan***, Sankalp Sinha*, et al. **equal contribution*

*First AI framework to generate 3D CAD designs from text descriptions.*

arXiv | Website | Code | Dataset

**CVPR 2025 • Rank 1 Vision Conference • Acceptance ∼24%**

**MARVEL-40M+: Multi-Level Visual Elaboration for High-Fidelity Text-to-3D Content Creation**

Sankalp Sinha*, **Mohammad Sadil Khan***, et al. **equally contributing first authors*

*Largest 3D captioning dataset (40M) with domain-specific and multi-level annotation.*

arXiv | Website | Explorer | Dataset

**AAAI 2026 • Rank 4 AI Conference • Acceptance ∼18%**

**NURBGen: High-Fidelity Text-to-CAD Generation through LLM-Driven NURBS Modeling**

Muhammad Usama*, **Mohammad Sadil Khan***, et al. **equally contributing first authors.*

*First NURBS-based LLM assistant for text-to-CAD generation. Introduces the PartABC dataset with text captions.*

arXiv | Project

**Under Review**

**DreamCAD: Scaling Multi-Modal CAD Generation using Differentiable Parametric Surfaces**

**Mohammad Sadil Khan**, et al.

*(1) Bezier surface-based CAD representation. Fast high-resolution mesh generation. SOTA in text/image/point-to-CAD. (2) CADCap-1M: Largest CAD captioning dataset.*

arXiv | Website

## PATENT

**Multimodal CAD Reconstruction Using Differentiable Parametric Surfaces** Filed 03/03/2026

*Assignee: Huawei Technologies Co., Ltd. (Noah's Ark Lab, London, UK)*

**Inventors:** Mohammad Sadil Khan (50%), Jiankang Deng (25%), Ismail Elezi (25%)

**Status:** PCT Application filed (PCT/EP2026/055709, internally accepted). Patent covers novel methods for state-of-the-art multimodal CAD generation, developed during research at Huawei's Noah's Ark Lab, London.

## EXPERIENCE

**Noah's Ark Lab, Huawei** **London, UK**

*Research Intern* - *Internship* May 2025 – Apr 2026

- Conducting research in 3D Reconstruction and Scene Editing under Dr Ismail Elezi (Principal Research Scientist) and Prof. Jiankang Deng (Asst. Prof. Imperial College London).
- Developed novel differentiable parametric surface methods, resulting in a filed patent (see Patent Section).
- Contributed to cutting-edge work at one of the UKs leading industrial AI research labs.

**Augmented Vision Lab, DFKI** — **Kaiserslautern, Germany**
*Research Assistant* - *Part Time* — Jun 2024 – Apr 2025

- Designed and implemented novel algorithms for AI-enhanced parametric CAD modelling for Luminous Project.
- Led research direction in text-to-3D model generation, producing two top-tier publications (NeurIPS Spot- light, CVPR)
- Provided technical leadership and collaborative support to the wider research team.

**CVI2 Group** — **Kirchberg, Luxembourg**
*Student Researcher* - *Full Time* — Jan 2023 – Feb 2024

- Designed novel algorithms for the Scan2CAD research project.
- Developed CAD-SIGNet, a vision-language architecture for CAD inference from point clouds (CVPR 2024 Highlight).
- Served as Technical Committee Member for the SHARP Workshop at ICCV 2023.

**Creatis, INSA Lyon** — **Lyon, France**
*Research Intern* - *Internship* — Feb 2022 – Jul 2022

- Developed a novel 3D medical image segmentation approach using point clouds.

## EDUCATION

**PhD in 3D Computer Science** — **Kaiserslautern, Germany**
*RPTU Kaiserslautern & DFKI* — Feb 2024 – Present
Supervised by Prof. Didier Stricker. Focus: 3D Reconstruction, Generative AI, Parametric Shape Modeling.

**M.Sc. in Machine Learning and Data Mining** — **France / Belgium**
*University Jean Monnet & KU Leuven* — Sep 2020 – Jul 2022
Erasmus Scholarship for exchange semester

**Masters (M1) in Data Science** — **Siruseri, India**
*Chennai Mathematical Institute* — Aug 2019 – Jul 2020

**B.Sc. in Mathematics** — **Kolkata, India**
*Ramakrishna Mission Residential College* — Jul 2016 – May 2019
Rank 2nd

## SKILLS

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|---|---|
| **Architecture** | VLM/LLM Inference, LoRA Fine-tuning, Transformers, Flow Matching, Diffusion Models |
| **Libraries** | PyTorch, PyTorch Lightning, Pytorch3D, vLLM, Blender Python, Kaolin, PythonOCC |
| **Programming** | Python, R, Julia, Java, Swift |
| **Languages** | Bengali (Native), Hindi (C2), English (C1), French (A2) |

## AWARDS & SCHOLARSHIPS

2021–2022 BRMI Regional Scholarship & Erasmus Scholarship — France
2020–2021 Charpak BCS Scholarship — French Embassy, India

## ACADEMIC SERVICE

**Peer Review** : 15+ papers — CVPR, NeurIPS, ECCV, ICML, AAAI, SIGGRAPH Asia, ICPR
**Mentorship** : Student supervision — 2025 – 2026
**Workshop** : Technical Committee Member — SHARP @ ICCV 2023