Mohammad Sadil Khan

PhD in 3D Computer Vision

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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 focuses on exploring and generating efficient 3D representation techniques, such as Triplane, Gaussian Splatting, or parametric CAD language.

Selected Publications

* equal contributions

1. **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.

   ⭘ <u>**Contributions**</u>.
   - **First AI framework** to generate CAD designs from text descriptions of varying complexities.
   - A **novel data annotation pipeline** for multi-level text prompt generation of DeepCAD dataset using open-source LLM and VLM.
   - A SOTA **end-to-end auto-regressive network** for text to CAD design generation.

2. **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.

   ⭘ <u>**Contributions**</u>.
   - A SOTA **end-to-end auto-regressive network** for CAD language generation from the input point cloud.
   - **Sketch Instance Guided Attention** for masked layerwise cross-attention between CAD and point features.

Education

RPTU Kaiserslautern	**Kaiserslautern, Germany**
PhD in 3D Computer Vision	*Feb 2024-*
KU Leuven	**Leuven, Belgium**
Erasmus Exchange in Faculty of Engineering Science	*Sept 2021-Feb 2022*
University Jean Monnet	**Saint-Etienne, France**
Masters in Machine Learning and Data Mining: Grade 15.6/20	*Sep 2020-Jul 2022*
Chennai Mathematical Institute	**Siruseri, India**
Masters(M1) in Data Science: CGPA 8.69/10	*Aug 2019-Jul 2020*

Experience

Augmented Vision Lab, DFKI	**Kaiserslautern, Germany**
Doctoral Researcher	*Feb 2024 -*

- Thesis Title: Vision-Language Models for 3D Scene and Shape Understanding.

CVI2 Group   **Kirchberg, Luxembourg**
Student Researcher   *Jan 2023 - Feb 2024*

- 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. Master Thesis Link **here**. (Grade: 16.5/20).

Skills

- **Architecture:** Open Source VLM and LLM, Transformers, Diffusion, CNN.
- **Library:** PyTorch, Pytorch-Lightning, vLLM, Transformers, Blender Python.
- **Programming:** Python, R, Julia, Java, Swift.
- **Interpersonal:** Creative and Independent Thinking, Collaborative Teamwork, Problem Solving.

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)