Gaurav Rai

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Education

Indraprastha Institute of Information Technology Delhi (IIIT-Delhi) *Aug 2020 - Present*
PhD Research Scholar, Computer Science and Engineering *CGPA: 8.24/10.0*
Areas of Interest: Computer Graphics, Visual Computing, and Computer Vision
Advisor: Dr. Ojaswa Sharma

Gurukula Kangri Vishwavidyalaya, Haridwar, Uttarakhand *2016 - 2020*
B.Tech. Computer Science and Engineering *CGPA: 8.52/10.0*

Publications

Published

LiveImage: Motion condition guided diffusion model for video motion transfer
Gaurav Rai, Ojaswa Sharma *2025*
International Conference on Multimedia & Expo (ICME) ***CORE A***

Text-to-Video Diffusion Models with Temporal Consistency and Rigidity Constraints
Gaurav Rai, Ojaswa Sharma *2025*
20th International Conference on Computer Graphics Theory and Applications (GRAPP) ***CORE B***
Project Page: https://graphics-research-group.github.io/ESA/

SKETCHANIM: Real-time sketch animation transfer from videos
Gaurav Rai, Shreyas Gupta, and Ojaswa Sharma *2024*
Computer Graphics Forum (CGF) ***Q1 Journal***
Project Page: https://graphics-research-group.github.io/SketchAnim/

Projects

Sketch2Motion | *Pytorch, CGAL, libigl, OpenCV, Scikit-learn* April 2025 – Present
- Sketch2Motion: 2D-to-3D Sketch Animations Using Video Motion Model
- Given a hand-drawn sketch video and a driving video, we create a 3D model of the 2D sketch and animate the 3D sketch model using video motion.

Indoor furniture placement | *Pytorch, Pytorch3d, OpenCV, Scikit-learn, OpenGL, Blender* Sept 2024 – Jul 2025
- Space-aware Indoor Furniture Recommendation and Placement using Agentic AI
- Given a floor plan, our proposed method performs space-aware and object-aware scene synthesis for automatic indoor furniture recommendation and placement.

Enhancing Sketch Animation | *Pytorch, libigl, OpenCV, Scikit-learn* Feb 2024 – Oct 2024
- Text-to-Video Diffusion Models with Temporal Consistency and Rigidity Constraints
- Given a static sketch and text prompt describing the motion, our method animates the sketch as per the input text description. The various valuable applications are children's ebooks, entertainment videos, video editing, etc.

LiveImage | *Pytorch, OpenCV, Scikit-learn* Aug 2022 – Dec 2024

- Motion condition guided diffusion model for video motion transfer
- An approach for image animation that has exciting applications in various visual tasks such as video editing and animation. It takes an image and a driving video as input and generates the animation video of the image based on the driving video's motion.

SketchAnim | *Pytorch, Pytorch3d, open3d, libigl, OpenCV, Scikit-learn* Aug 2021 – Dec 2023

- Real-time sketch animation transfer from videos
- Allows novice users to bring static drawings to life by applying deformation-based animation effects extracted from video examples.

Experience

Visiting Researcher, BTH Sweden *Sept 2024 - Feb 2025*

Teaching Assistant, IIIT-Delhi *Aug 2020 - May 2024*

Courses: Computer Graphics [CSE333/533] (Monsoon 23), Scientific Computing [MTH373/573] (Monsoon 22), Linear Algebra [MTH100] (Winter 21)

Key Responsibilities

- Conducted tutorials and discussion sessions, fostering active learning.
- Graded assignments and provided constructive feedback to students.
- Mentored students on research projects related to the course topics.

Achievements

- Received ACM Student Travel Grant for ICME 2025.
- Reviewer at IEEE ICME 2024 and 2025.
- Teaching Assistance at ACM Summer School on Shape Modelling Topic: Introduction to libigl at IIIT Delhi (2022).
- Qualified Graduate Aptitude Test in Engineering (GATE) in Computer Science and Engineering (2020).

Skills

Programming Languages: C/C++, Python

Tools: OpenGL, Qt, Libigl, CGAL, Pytorch, OpenCV, Scikit-learn

Research Interest: Computer Graphics, Visual Computing, Motion Retargeting, and Computer Vision.