Rahul Goel

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Research Interests

I am a research student at CVIT, IIIT Hyderabad. My present interests are in the topics arising from the intersection of Computer Graphics and Vision. My master's thesis has been focused on the editing and manipulation of Radiance Fields. I'm particularly interested in developing methods which are fast and accurate leveraging traditional computer graphics algorithms.

Education

B. Tech. + MS (by Research) in Computer Science and Engineering   *IIIT Hyderabad*
Dual Degree Program   *July 2019 - Ongoing*
Currently: Masters Final Year
GPA: 8.8/10

Publications

AAAI 2024	V. Gupta, R. Goel, S. Dhawal, P.J. Narayanan, *GSN: Generalisable Segmentation in Neural Radiance Fields*
CVPR-W 2023	R. Goel, S. Dhawal, R. Shah, P.J. Narayanan, *FusedRF: Fusing Multiple Radiance Fields*
CVPR 2023	R. Goel, S. Dhawal, S. Saini, P.J. Narayanan, *Interactive Segmentation of Radiance Fields*
ICVGIP 2022	R. Goel, S. Dhawal, S. Saini, P.J. Narayanan, *StyleTRF: Stylizing Tensorial Radiance Fields*

Projects

RESEARCH:

Interactive Segmentation of Radiance Fields: The project aims to do object selection and retrieval using user strokes in a radiance field representation. Our proposed method is parallelized to achieve interactive rates for segmentation task. The method starts by finding a high confidence region and growing it iteratively using a multi domain search.

Radiance Field Fusion: Rendering multiple composited radiance fields requires memory and rendering-times that grow in proportion to the number of composited radiance fields. We propose an efficient distillation method which reduces the memory and rendering-time requirements to that of a single Fused radiance field.

Stylizing Tensorial Radiance Fields: We propose a simple pipeline to quickly apply style transfer to radiance fields for generating stylized novel views. We leverage the spatial invariance of CNNs to achieve consistent and fast style transfer.

OTHERS:

Botomania Server: The backend server supporting Botomania, a competition held at IIIT Hyderabad, where bots compete against each other in a 1v1 game.

Maze Game: A 2D game where the player has to complete a randomly generated maze under different constraints. Rendered using OpenGL.

Technical skills

Programming Languages/Tools	C, C++, Python
Frameworks	PyTorch, OpenCV, OpenGL
Misc.	Git, Linux, Vim, Bash, LaTeX

Work experience

Undergraduate Researcher *CVIT, IIIT Hyderabad*
Advisor: Prof. P.J. Narayanan *June 2021 - Present*

- Working on Neural Radiance Fields.
- Worked on 3D Shape Matching.

SDE Intern *Rubrik Inc.*
Systems Engineering *May 2023 - July 2023*

- Merged two large-scale deployers to a single one.
- Optimized large-scale deployment speed from 2 days to 4 hours.

Teaching Assistant *IIIT Hyderabad*
Computer Graphics *Spring 2022*

- Designed assignments and conducted tutorials.

Teaching Assistant *Hyderabad*
AlgoUniversity *November 2021 - July 2022*

- Developed several algorithmic tasks and automated tests for them.
- Took lectures on approaches to solve these algorithmic problems.

Achievements and Activities

- Delivered lectures on NeRFs twice for Computer Vision course at IIIT Hyderabad.
- Deans List I awardee.
- Qualified for ACM ICPC Regionals (All India Rank 60).
- Helped review papers for CVPR , ICCV, ICLR and AAAI.

Positions of Responsibilities

Admin *IIIT Hyderabad*
Programming Club *May 2021 - April 2022*

- Organized regular meets to learn about new topics in Competitive Programming.
- Organized CodeCraft-22 on Codeforces with 25k live participants.

Organizer *IIIT Hyderabad*
Botomania *2021 & 2022*

- Botomania is a bot v/s bot competition held by IIIT Hyderabad.
- Developed, deployed as well as organized for two consecutive years.