Dhawal Sirikonda ✆

Rendering and Imaging Science Lab
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RESEARCH INTERESTS

I am Dhawal, a Ph.D. student at Dartmouth College in Hanover, NH, working with Prof. Adithya Pediredla on developing novel imaging systems. My research focuses on fast imaging by integrating multiple sensors and ultrafast lensing (Acousto-Optic). Insights from ultrafast lensing contribute to innovative solutions in applications such as high-speed scanning ($1000\times$ faster than SOTA) and high-speed under-water communication ($600\times$ faster than SOTA). Prior to my Ph.D., I completed my Master's at IIIT-Hyderabad, where I worked with Prof. P.J. Narayanan on enhancing graphics and 3D vision pipelines with machine learning.

EDUCATION

Sep 2023 - present	**Ph.D.** Rendering and Imaging Science Lab (RISC-Lab), Dartmouth College, Hanover, New Hampshire, United States Advisor: Adithya Pediredla
Jan 2020 - May 2023	**M.S., Computer Science** Center for Visual Information Technology (CVIT), IIIT-Hyderabad, India Advisor: Prof. P. J. Narayanan Thesis: Real-time Rendering of Arbitrary Surface Geometries using Precomputed Radiance Transfer
Sep 2019 - Dec 2019	**M.Tech, Computer Science (discont.)** (discontinued and took up Research Program), IIIT-Hyderabad, India
2014 - 2018	**B.Tech, Computer Science** JNTUK-University College of Engineering Vizianagaram, India

RESEARCH

Dhawal Sirikonda, Praneeth Chakravarthula , Ioannis Gkioulekas and Adithya Pediredla "*Structured Light with a million light planes a second*", (under review)

Rahul Goel*, **Dhawal Sirikonda***, Saurabh Saini, and P. J. Narayanan, "*Interactive Segmentation of Radiance Fields*", CVPR, 2023, (* ≡ Equal Contribution)

Vinayak Gupta, Rahul Goel, **Dhawal Sirikonda**, and P. J. Narayanan, "*GSN: Generalisable Segmentation in Neural Radiance Field*", AAAI, 2024,

Dhawal Sirikonda, Aakash KT, and P. J. Narayanan, "*Real-time Rendering of Arbitrary Surface Geometries using Learnt Transfer*", ICVGIP, 2022

Rahul Goel*, **Dhawal Sirikonda***, Saurabh Saini, and P. J. Narayanan, "*StyleTRF: Stylizing Tensorial Radiance Fields*", ICVGIP, 2022, (* ≡ Equal Contribution)

Dhawal Sirikonda, Aakash KT and and P. J. Narayanan, "*Learnt Transfer for Surface Geometries*", HPG-Posters(High Performance Graphics), 2022

Dhawal Sirikonda, Aakash KT and and P. J. Narayanan, "*Transfer Textures for Fast Precomputed Radiance Transfer*", EG-Posters(EuroGraphics), 2022

Pulkit Gera, Aakash KT, **Dhawal Sirikonda** and P. J. Narayanan, "*Neural View Synthesis with Appearance Editing from Unstructured Images*", ICVGIP, 2021

Pulkit Gera, Aakash KT, **Dhawal Sirikonda**, Parikshit Sakurikar and P. J. Narayanan, "*Appearance Editing with Free-viewpoint Neural Rendering*", arXiv, 2021.

EXPERIENCE

Sep '23 - Jan'25	**PhD Researcher - Rendering and Imaging Science Lab** Working on the intersection of Acousto-Optic imaging applications, like fast scanning, data communications, and acoustic lensing.
Jan '20 - May'23	**Research Assistant - Center for Visual Information Technology, IIIT-Hyderabad** Worked on collaborative projects, supervised undergraduate and dual degree students, and explored my own research topics and solutions. The initial part of the work involved exploring Differentiable Rendering pipelines to obtain surface properties from multiview data(using mitsuba2).
Sep '22 - Present	**Teaching Assistant - Advanced Graphics AR and VR - IIIT Hyderabad** Audience are mainly graduate and undergraduate students.
Sep '22 - Present	**Teaching and Mentoring AIML projects - Talentsprint** Audience are mainly employees of the industry from various domains Systems, Applications, and Testing, trying to adapt to new ML pipelines
Jan '21 - May '21	**Teaching Assistant - Computer Graphics - IIIT Hyderabad** Audience are mainly graduate and undergraduate students.

TECHNICAL/ACADEMIC SKILLS

Programming:	Python, C/C++
Libraries/API:	Mitsuba2, CUDA, OptiX, OpenGL, PyTorch
Academic Core Courses:	Advance Graphics AR and VR, Computer Vision, Statistical Methods in AI
Other Courses:	Database Management Systems, Linear Algebra, Operating Systems

ACADEMIC PROJECTS

PREVIOUS:
Object retrieval from Radiance Fields (Research Project in collaboration with Dr. Rajvi Shah)-Interactive object and sub-scene retrieval from scenes represented as Radiance Fields. The work involves growing high-confidence object content to encompass intricate details, aiming for accurate retrieval.

Real-time rendering of Implicit Surfaces using Precomputed Radiance Transfer (Thesis: CVIT, IIIT-H, 2022): A simple yet fast approach to address the lack of storage schema in the functional representation of surfaces for the incorporation of Precomputed Radiance transfer(Spherical Harmonics) for both glossy and diffuse materials.

Exploring storage schemas for Transfer Vector Storage (Research Project, IIIT-H, 2022): The project was based on the exploration of storage schemas(UV and Vertex attributes), to find optimal sampling and interpolation for artifact-free renders.

Appearance Editing and Novel View Synthesis of captured data (Research project: CVIT, IIIT-H, 2021): The project extends Novel View synthesis pipelines to accommodate appearance edits. Preprocessing the data using Differentiable rendering for the separation appearance, followed by a disentangled rendering framework.

ACHIEVEMENTS

Enlisted in Roll of Honors, Academically 2nd in the batch of 2014-2018, JNTUK-UCEV	2018
Certified Programmer in Building Systems and Applications, MissionRnD	2016-2017