Dhawal Sirikonda

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Research Interests

I am a Master's student associated with CVIT, IIITH, working with Prof. P.J. Narayanan. I am currently working on real-time photorealistic rendering. I am really interested in creating immersive content in real-time scenarios. My work is centered around Spherical harmonic representation of Lighting and Visibility information, advancing the work of Precomputed Radiance Transfer. I am currently working closely with Ph.D. student Sayantan Datta to accommodate Global Illumination in the analytically evaluated area light Integrals using Linearly Transformed Cosines(LTCs). I am also working with Dr. Rajvi Shah for accurate object retrieval from scenes represented as Radiance Fields.

Education

Jan 2020 - present — **M.S., Computer Science** — CGPA: 8.67/10
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.)** — CGPA: 8.2/10
(discontinued and took up Research Program), IIIT-Hyderabad, India

2014 - 2018 — **B.Tech, Computer Science** — 81.85%
JNTUK-University College of Engineering Vizianagaram, India — Rank:2

Research

Rahul Goel, **Dhawal Sirikonda**, Saurabh Saini, and P. J. Narayanan, "*Interactive Segmentation of Radiance Fields*", Under Review.

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

Rahul Goel*, **Dhawal Sirikonda***, Saurabh Saini, and P. J. Narayanan, "*StyleTRF: Stylizing Tensorial Radiance Fields*", ICVGIP, 2022. - *to appear*

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

Jan '20 - Present **Research Assistant - Center for Visual Information Technology, IIIT-Hyderabad**
Worked on collaborative projects, supervised undergraduate and dual degree students along with exploration of my own research topics and solutions. The initial part work constituted the exploration of 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

Ongoing:

Incorporation of Global Illumination in Analytically Evaluated Area Lights using LTCs (Research Project: in collaborations with Sayantan Datta) - Methods like Ratio Estimator generate real-time renders comprising of Direct Illumination via the usage of analytical area light evaluation clubbed with stochastic shadows. We are working on incorporating missing Indirect Illumination levering radiance caching strategies.

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.

Previous:

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

References

Prof. P. J. Narayanan
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