Sneha **Bhakare**

MS Student · School of Computing · University of Utah

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Reasearch Interests: Ray Tracing, Rendering, Virtual Reality, Augmented Reality, Animation, Computer Vision

Education

University of Utah *August '19 - Present*

M.S. in Computing (Graphics and Visualization Track) *GPA: 4/4*

- Courses: Ray Tracing for Graphics, Interactive Computer Graphics, Virtual Reality, Physics-based Animation, Computer-Aided Geometric Design, Visualization for Scientific Data

Indian Institute of Technology Bombay *July '15 - May '19*

B.Tech. in Computer Science and Engineering with Honours *GPA: 7.34/10*

- Relevant Courses: Computer Graphics, Advanced Computer Graphics, Medical Image Computing, Digital Image Processing

Research

Preprocessing for DeepSSM *Spring 2020*

Research Assistant under Prof. Ladislav Kavan

- Investigating machine learning approaches to preprocess the 3D shape data for the DeepSSM network

Coherent Rendering for Augmented Reality [report] *Aug '18 - April '19*

Undergraduate Thesis under Prof. Parag Chaudhuri

- Estimated the spherical harmonics lighting for a scene with a known arbitrary object (used as lightprobe) using a single CNN
- Trained the CNN on a synthesized training dataset of known arbitrary object with systematic variation of illumination
- Investigated combinations of planes from the environment to use them effectively as a plausible lightprobe

Research Implementations & Projects

Ray Tracer [code] *Fall 2019*

Ray Tracing for Graphics under Prof. Cem Yuksel

- Built a ray tracer using path tracing and photon mapping to compute global illumination, soft shadows, glossy surfaces
- Implemented texture filtering, anti-aliasing, depth of field rendering and BVH acceleration structure to improve performance
- Awarded with the University of Utah Teapot Rendering Competition Juror Choice Award for custom rendered scene

Interactive Decision-making in VR [report] [code] *Fall 2019*

Virtual Reality under Prof. Rogelio E. Cardona-Rivera

- Built a virtual environment using Unity to investigate the effect of spatial depth of information on decision-making performance

Game in Augumented Reality [code] *Spring 2019*

Advanced Computer Graphics under Prof. Parag Chaudhuri

- Developed a ball in a maze puzzle game controlled by tilting the marker board in AR using ARToolKit 5 and Box2D

3D Graphical Modelling and Animation [video] [code] *Fall 2018*

Computer Graphics under Prof. Parag Chaudhuri

- Built hierarchical models, added lighting, texture and scripted animation to create a short animation video using OpenGL
- Implemented an interface to create and edit Bezier space curves by clicking control points for camera animation

Archetypal Style Analysis [report] [code] *Spring 2019*

Advanced Machine Learning under Prof. Sunita Sarawagi

- Derived 32 archetypal styles from 2046 artworks, implemented style transfer and experimented with the quality of stylization

Work Experience

Teaching Assistant

- Computer Graphics by Prof. Ladislav Kavan, University of Utah *Fall 2019*
- Computer Programming by Prof. Ganesh Ramakrishnan, IIT Bombay *Spring 2019*
- Computer Programming by Prof. Om Damani, IIT Bombay *Fall 2018*

Morgan Stanley *Summer 2018*

- Built an E2E testing framework for an Angular application using Protractor to ease testing and aid debugging
- Developed functionalities to perform automated routines and validate xmlhttprequests in a sandbox environment

Edelweiss Finance and Investment Limited *Summer 2017*

- Developed C++ application for Breach Report generation for 4 Order Trade Analytic platforms and optimized it at design and implementation level to improve its time performance by 70% using parallel programming and memory mapping