Curriculum Vitae

Vikas Thamizharasan

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Education

2020 - 2021 | **Brown University**
Masters in Computer Science *(graduating Dec 2021)*

2014 - 2018 | **International Institute of Information Technology - Hyderabad**
Bachelor Of Technology in Computer Science and Engineering

Work Experience

May 2021- Present | **Programming Intern**, Activision Blizzard, USA
Interning in the R&D team at Central Technology, Activision.

Sep 2020- May 2021 | **Teaching Assistant**, Brown University, USA
Topics in 3D Computer Vision and Machine Learning, CSCI2952K, Fall 2020.
Computer Vision, CSCI1430, Spring 2021.

May 2020- ongoing | **Graduate Research Assistant : Visual Computing Lab, Brown University**, USA
Advised by Prof. James Tompkin and Prof. Daniel Ritchie, working on problems in the intersection of Computer Vision, Graphics and Deep Learning.

Aug 2018- Feb 2019 | **Research Intern : INRIA - Sophia Antipolis**, France
STARS Team in collaboration with Blu Manta (French Startup),
Advised by Dr. Antitza Dantcheva and Dr. François Brémond

May 2017- Aug 2017 | **Intern : Google Summer of Code**, Google
Mentored by Fabien and Souriya from INRIA and hosted by Google
[Source Code and Wiki]

Publications

2021 | **Learning Physically-based Material and Lighting Decompositions for Face Editing**, *AICC @ CVPR 2021*
Qian Zhang,* **Vikas Thamizharasan***, *James Tompkin*

2020 | **Shape from Tracing: Towards Reconstructing 3D Object Geometry and SVBRDF Material from Images via Differentiable Path Tracing**, *3DV 2020*
Loudon Cohen, Brad Guesman, **Vikas Thamizharasan**, *James Tompkin, Daniel Ritchie*
[Webpage] [Paper]

Projects

2021 | **Neural Texture Generation**
Learning continuous semantic texture representations of 3D objects to enable 3D texture reconstruction for an input mesh from a single 2D image and subsequently build a generative model for synthesising texture of unseen objects by sampling from latent space. Inspired by recent works in 3D deep learning.
PyTorch

2020 | **Illumination-guided example-based stylization of 3D renderings**
GPU implementation of StyLit and EbSynth for CSCI 2240. Based on the paper "StyLit: illumination-guided example-based stylization of 3D renderings" by Jakub Fiser et al., SIGGRAPH '16.
[Source Code] [Video] **C++, CUDA**

2021 | **OBS Plugin for real-time video production effects guided by context from speech**
Expanding OBS-StreamFX and OBS-shaderfilter with automated filter application using audio and speech.
[CS1301] **C++, Python, HLSL**

2020 | **Interactive Graphics Course, CSCI 2240**
Implemented Monte Carlo Path Tracer, Geometry processing operations like Subdivisions, Simplification and Remeshing and Animating deformable solid objects using the Finite Element Method.
[ref1] [ref2] [ref3] **C++**

2018 | **3D Object Reconstruction and Manipulation with a single image**
Inspired by 3-Sweep and Sketch-Based Modeling to reconstruct 3D models from a single image using geometric primitives to infer geosemantic constraints and model-to-image alignment using constrained optimization. The result was an interactive image editor where objects could be manipulated in 3D space with the advantage of applying rigid transformations along with texture mapping to create realistic re-rendering.
[Source Code] **PyQt, PyQt3D, OpenCV, AutoDiff**

2017 | **Search Engine for Wikipedia**
Created a search engine for Wikipedia (60GB dump) from scratch. Processed and tokenized large dump into inverted indexes. Two-pass multi-way merge sort to create single index(4GB). Used Cosine similarity with modified parameters for ranking. Project split into tasks and ran in parallel for fast retrieval and search.
Python

2015 | **Vshell**
Wrote a Linux Shell from scratch in C.

Other Experience

2018 | **Volunteer**, IEEE International Conference on Image Processing, Applications and Systems.

2017 | **Head of Art Committee**, IIIT-Hyderabad.

2016 | **Teaching Assistant**, Sculpture, IIIT-Hyderabad.

Achievements

2017 Microsoft Code.Fun.Do Hackathon Winner Hyderabad.
2013 Top 5 in WHO Art competition.
2013 2400/2400 in SAT Subject Test.

Courses taken

- Interactive Computer Graphics
- Database Systems
- Computer Vision
- Statistical Mechanics in AI
- Artificial Intelligence
- Data Structures
- Advanced Deep Learning
- Software Engineering
- Distributed System
- Digital Image Processing
- Principles of Program. Lang.
- Computer Networks
- Intro to Robotics
- Linear Algebra
- Info. Retrieval and Extraction
- Complexity and Advanced Algo.
- Digital Signal Analysis.
- Operating Systems

Technical skills

Languages	Python, C++, C, MATLAB, C#, Bash, Javascript, CUDA, Racket/Scheme.
Libraries	Pytorch, Tensorflow, OpenCV, Qt, OpenGL, Eigen, Windows Form App, RMI
Tools	Blender, Inkscape, LaTeX, GCP, Android Studios, Unity, Renderman.

Interests

Research interests lie in the intersection of problems in Computer Vision, Computer Graphics and Machine Learning. This includes differentiable rendering, neural rendering, GANs, self-supervised disentangled representation learning, image-based modelling, shape and texture synthesis, non-linear 3d face modelling, real time rendering, AI for creative content. Other interests : demoscene, evolutionary robotics, open source development, computational geometry, full stack development, sculpting, drumming, cooking, bouldering, anthropology, chess.