MALLIKARJUN SWAMY

mswamy@ucsd.edu linkedin.com/in/mallikarjun-swamy malikarjun.github.io

EDUCATION

University of California San Diego, La Jolla, CA *Sept 2021 - Present*
M.S. Computer Science (Graphics & Vision Track) – GPA: 4.0/4.0

Birla Institute of Technology and Science, Pilani, India *Aug 2014 - May 2018*
B.Eng. (Hons.) Computer Science – GPA: 8.72/10.0

SKILLS

Languages: C++, GLSL, HLSL, Python, C, Java
Frameworks/Tools: Unreal Engine 4, OpenGL, Vulkan, Optix, Embree, Three.js, Numpy, Pytorch, Jax, Cuda, OpenMP, MPI, CMake, Docker

WORK EXPERIENCE

ByteDance (TikTok), USA *June 2022 - September 2022*
Computer Graphics Research Intern
- Built a rendering pipeline to generate photorealistic synthetic data for 3 different graphics and vision research projects

PayPal, India *July 2018 - August 2021*
Software Engineer I (Promoted to Software Engineer II in Feb 2020)
- Lead developer of a suite of libraries used by more than 10 teams at PayPal to build case management systems

Max Planck Institute for Intelligent Systems, Germany *Jan 2018 - Jun 2018*
Research Intern with Prof. Sergi Pujades Rocamora
- Shape characterization and 3D localization of internal organs from medical images

Applied Computer Science Dept., University of Winnipeg, Canada *May 2017 - July 2017*
Research Intern with Prof. Christopher Henry
- Classifying land-use and land-cover of satellite images using convolutional neural networks

PROJECTS

Visual Computing Lab, UC San Diego *April 2022 - June 2022*
Graduate Student Researcher with Prof. Tzu-Mao Li, Prof. Manmohan Chandraker
- Building a real-time renderer focused on photorealistic global illumination targeted for agent learning tasks
- Designed differentiable denoising filters for path traced images with low sample count in real time rendering context

Graphics Projects *Sept 2021 - March 2022*
- Developed a real time soft shadow rendering algorithm for CPU based on Axis-Aligned filtering using Embree
- Worked on real time caustics rendering and shadow mapping using a custom rendering framework (The Forge)
- Implemented Volumetric Path Tracing with delta tracking to render smoke, Photon Mapping for caustics and Disney Principled BSDF for different materials

Parallel Computing Projects *April 2022 - June 2022*
- Leveraged MPI to run Aliev-Panfilov Simulation (cardiac excitation model) on a supercomputer
- Optimized matrix multiplication on CPU (Intel AVX-2 SIMD instructions) and GPU (CUDA) to achieve comparable performance with OpenBLAS and CuBLAS, respectively.

PUBLICATIONS

Henry, C. J., Storie, C., Palaniappan, M., Alhassan, V., Swamy, M., Aleshinloye, D., Curtis, A., and Kim, D."Automated LULC map production using deep neural networks". International Journal of Remote Sensing (2018)

AWARDS

- Selected for Mitacs Globalink Research Internship, a fully funded summer internship opportunity provided to meritorious undergraduate students from 9 different countries to pursue research in Canada for 3 months