MALLIKARJUN SWAMY

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EDUCATION

University of California San Diego, La Jolla, CA *Sep 2021 - Mar 2023*
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++, C, Objective-C, GLSL, HLSL, Python, Java
Frameworks/Tools: Vulkan, OpenGL, Metal, OpenXR, Direct3D 11/12, Unreal Engine, Unity, Houdini, Optix, Embree, RenderDoc, CUDA, CMake, Pytorch, Tensorflow, Numpy, Jax

WORK EXPERIENCE

Samsung Research America, USA *January 2023 - Present*
Staff Graphics Software Engineer
- Authored advanced graphics shaders with a strong focus on performance optimization for Samsung's AR/VR headset.
- Optimized Vulkan and OpenGL ES pipelines to reduce GPU time and improve power efficiency in an XR runtime.
- Adapted existing rendering frameworks for immersive experiences.
- Inventor of 3 filed graphics and vision patents (Lead Inventor on 2).

Teaching Assistant for Computer Vision at UC San Diego *September 2022 - December 2022*
- Responsibilities included teaching discussion sections, conducting office hours and grading

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
- Unreal Engine plugin development for glTF format to use UE 5's real time renderer for agent learning tasks
- Designed differentiable denoising filters for path traced images with low sample count in real time rendering context

Graphics Projects
- [Hobby Project] Created a basic path tracer using Metal's ray tracing API and currently re-engineering it for Direct3D 12.
- 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

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