Akash Bapat

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Education

Ph.D in Computer Science *Expected Aug 2019*
University of North Carolina at Chapel Hill
Advisor: Dr. Jan-Michael Frahm

M.S. in Computer Science *May 2016*
University of North Carolina at Chapel Hill

B.Tech in Electrical Engineering – CPI : 9.14/10 *May 2014*
with Minor in Computer Science
Indian Institute of Technology Gandhinagar

Research Experience

Research Assistant, UNC 3D Computer Vision Group *May 2015 – Present*

Domain Transform Solver

- Designed a framework for edge-aware optimization which is scalable and highly parallelizable.
- Wrote CUDA code for applications like stereo, colorization, depth super-resolution and multi-view stereo to show flexibility of our framework.

High Frequency Tracking: Radial Distortion (CVPR'18, patent submitted)

- Invented a method which benefits from rolling shutter and radial distortion for improved tracking.
- Radial distortion is explicitly leveraged to extract more information about motion by tracking curves.

High Frequency Tracking: Rolling Shutter (**Best** paper at ISMAR 2016)

- Developed a method to track head pose at >80kHz frequency using a camera cluster.
- Created a simulator for rolling shutter effect in Unity 3D and OpenGL.

Work Experience

Google Inc.

Software Engineering Intern, Geo *Summer 2018*

- Researched and implemented a pipeline to estimate image formation models from satellite images.
- Worked on improving DSMs in areas where aerial data is not available.

Software Engineering Intern, Daydream *Summer 2017*

- Developed software and wrote tests for Google Jump's stereoscopic 360^o stitching system.
- Researched and implemented a pipeline to remove artifacts in optical-flow based stitching.

Texas Instruments. Summer Intern *Summer 2013*

- Benchmarked algorithms for c6xx processor and a new processor under development.
- Optimized bilateral filter using intrinsic functions for these processors resulting in a 2x speed-up.

Projects

Wide FoV Video-based Augmented Reality *Spring 2017*

- Integrated a stereo camera with the HTC Vive headset. The prototype software superimposes virtual objects on the captured stereo imagery, creating an AR experience with a traditional VR display.

Stereo for Autonomous Driving *Spring 2017*

- Led computer vision efforts in a team of 7 to develop a $1/10^{th}$ scale autonomous car.
- Designed an open-source SDK for stereo estimation to support the ZED camera.

Honors

ISMAR 2016 best paper award, IIT Gandhinagar Dean's List

Computer Skills

Languages: C/C++
Software/API: MATLAB, Unity3D, OpenGL, OpenCV, Qt

Relevant Courses

3D Computer Vision, Computational Photography, Autonomous Driving,
Exploring Virtual Worlds, Algorithm Analysis, Compilers.