Sida Li

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Education

University of Illinois at Urbana-Champaign   GPA: 3.9
    Bachelor of Science in Computer Science and Psychology   May 2015
    Master of Science in Computer Science   May 2016
        Thesis: Augmented Reality Persistent Annotation

Professional Experience

University of Maryland UMIACS - *AR/VR Researcher*   Aug. 2016 - present
Volumetric Capture Studio
- Designed and constructed a 300 camera volumetric hologram capture studio
- Developed embedded camera capture controlling software on Jetson AGX Xavier boards
- Achieved software synchronization across 300 cameras to within 30 milliseconds
- Trained PyTorch neural network to extract foreground content on captured video data
- Deployed and optimized foreground segmentation neural network on GPU cluster
- Implemented CUDA optimized visual hull reconstruction using octree data structure
- Utilized FFmpeg API to encode and decode multi-stream videos
- Researched and developed hologram rendering software using OpenGL geometry shaders and techniques such as layered rendering

Dynamic Navigable 360 Environments (patented)
- Researched and implemented dynamic navigable 360 environments using multiple synchronized 360 videos and spatial audio
- Developed prototype VR software through both OpenGL and Unity rendering pipeline
- Delivered numerous collaborative projects using this technology and its derivatives: (project details are featured on the mbrc.umd.edu/research/ website)
  - Immersive Language Learning: Developed photorealistic navigable 360 environments with ambisonic audio for high-level language learning
  - Navigable Immersive Opera Experiences: Created immersive virtual reality and music therapy for non-opioid pain interventions
  - Immersive Environments for Combating Implicit Bias: Assisted Prince George's County Police Department in VR training with multimodal data tracking
  - Four Strings Around the Virtual World: Fused 360 degree stereo video and images into VR experience to promote democratization of the performing arts
  - Fasciotomy Medical Procedure Training: Developed Unity VR application using stereo GoPro footage for high resolution surgery training
  - Neural Correlates Pain Management Study: Developed Unity VR application paired with psychology software and synchronized with electrogram recording

Other Research Prototypes
- Blended Reality for Occupational Training: Prototype blended reality software that enabled interactive and navigable 360 environments for training scenarios
- COVID-19 Patient Data Visualization Tools: iOS App providing intuitive documentation, review and annotation of ultrasound data
- GSK 360 degree stereo virtual facility tour consists of over 1000 view points
- Magic Leap 360 video based hologram visualization

Virtual Reality Teaching Assistant - *Dr. Steve LaValle*   Jan. 2016 - May 2016
- Designed assignments and machine problems that incorporated core VR concepts
- Guided and advised VR projects from a pool of 33 student project groups

Skycatch - *Computer Vision Engineer Intern*   Jun. 2015 - Aug. 2015
- Developed proprietary computer vision algorithm to refine point cloud; achieved 10cm accuracy in georeferenced point cloud model ([patented](#))
- Optimized structure from motion pipeline for large scale datasets up to 800 images

Blue Chips Technology Co., Ltd - *Software Development Intern*   Jul. 2013
- Developed C-based network socket under Objective-C application structure
- Accessed iOS native code on Javascript using Apache Cordova plugin

Research Experience

Graduate Research Assistant - *Dr. David Forsyth*   Aug. 2015 - May 2016
- Developed augmented reality annotation system on Project Tango tablet to create persistent annotation in any environment
- Established collaborative platform for multiple devices to operate synchronously
- Conducted user study to verify productivity increase on annotation tasks

Undergraduate Research Assistant - *Dr. Golparvar-Fard*   Jan. 2014 - May 2015
- Built web application to register image to 3D model with user-guided inputs
- Implemented mesh-assisted structure from motion using registration as constraints for bundle adjustment

Skills

- C++ / Python / C#
- Unity / OpenGL / CUDA / FFmpeg / OpenCV
- OpenMVG(contributor) / COLMAP / PyTorch / Ceres-Solver
- Nvidia Jetson Multimedia API / Nvidia Video Processing Framework