Shubham Singh
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SUMMARY

I am enthusiastic about research and development with latest technologies, especially with mixed reality and computer vision. I have experience in building cross platform multiplayer application with enterprise standards, leveraging latest development in the field of VR/AR using Unity and computer vision.

EDUCATION & CERTIFICATION

University College London (UCL), London Sep'19-Sep'20
Master of Research (MRes) in Virtual Reality
CGPA - pursuing

Rajiv Gandhi Prodyogiki Vishwavidyalaya, Bhopal Jul'12-Jun'16
Bachelor of Engineering in Information Technology
CGPA – 7.33/10

Computer Vision with OpenCV and Deep Learning Dec'19
MOOC on Udemy [Certificate]

Computer Vision and Image Analysis Dec'18
Microsoft course on edx.org [Certificate]

SKILLS

Languages: C++, C#, python, JS, MATLAB and CG.

Industry Knowledge: Computer Graphics, Computer Vision, Differential Geometry, Games and Computer Networking.

Tools/SDK/API: Unity3D, OpenCV, libigl, ARCore, OpenGL, SFML, Boost, Leap motion, Unity DOTS, Vive SRanipal, WebRTC, Kinect, Keras, nodeJS, Android Studio, FFMPEG, PUN, Mapbox, Git, Azure, GCP, NAS.

PROJECTS

- Smart city project: used VSLAM to reinforce GPS tracking for real-time cross-platform collaboration in mixed reality application, supporting features like - virtual guides, free hand drawing, voice conferencing, and loading runtime contents. [Demo]
- Mesh alignment using ICP point-to-point and point-to-plane. [Demo]
- 3D mesh Laplace operator, eigen analysis and Fourier reconstruction. [Link]
- Path tracing rendering: physically corrected Phong shading with BRDF and Quasi Monte Carlo approach of Halton sequence. [Demo]
- Escape room project using mixed reality – Vive, Leap motion, trackers, room scale mapping and haptic feedback. [Demo]
- Inverse kinematic with temporal and permanent constraints: Extended novel FABRIK implementation for solving IK for articulated bodies of varying length and implemented temporal constraint of angular velocity and permanent constraint of swing and twist for every joint. [Project]

EXPERIENCE

Summer Research Intern Jun'20 - present

Research Centre on Interactive media, Smart systems and Emerging Technologies (RISE) LTD, Cyprus

- Working on a mixed reality based collaborative application for AR and VR users, that facilitates real time collaboration and dynamic experiences on a geographical scale (tightly coupled GPS + VSLAM).
- Exploring on possible use cases and integration of real-time IoT data with the platform.

Staff Engineer Sep'17 – Jun'19

Imaginate Software Pvt. Ltd. Hyderabad

- Awarded as best person in Technology for year 2018.
- Worked in the core product team and was responsible for the architecture and development of "Assist" (AR based product), which is being used by clients such as – UTC, Ford, ABB and others. I was involved in R&D and development of core features such as- A/V conferencing, feature tracking in livestream, screen sharing, etc.
- Lead for a VR collaboration project for a team of petro-scientists at Shell PLC. I was incharge for an end-to-end delivery of the 6 months long project, where I captured the requirements from clients and coordinated with internal team of programmers, artists and management. I took care of the R&D and core features, such as – collaboration with CT-scanned rock samples, fluid simulation, plant explosion simulation and evacuation, and maintenance.
- Developed feature for recording 3D VR sessions, which records all actions, events, conversation (audio), and contents of the session. Extremely useful for the case of collaborative session which can be reviewed and replayed at later time.
- Written platform (Win & android) native libraries to render out office documents files (i.e. DOCX and XLSX) and PDF inside VR application in real time.

Lead Software Imagineer Nov'16-Aug'17

XR Labs Pvt. Ltd. Chennai

- Developed interactive visualization app for pattern and color painting on physical wall, used OpenCV for image segmentation and watershed, Unity3D for visualization and nodeJS for local server. The application was deployed on intel NUC and leap motion for interaction.
- Developed immersive VR-experience of endangered wildlife species on HTC Vive using Unreal engine, which was showed at Abu Dhabi airport.
- Worked on multiple VR and AR projects for training, repair and inspection of mechanical machinery such as engine valve adjustment, servicing of tractor, electric scooter etc.
- Worked on markerless tracking, annotations and virtual meeting space – multi-user experience with VR collaboration.
- Written a custom parser for loading 3D CAD files at runtime in Unity.

Game Programmer Jan'16 – Nov'16

All in a days play Pvt. Ltd. Mumbai

- Created simulation game for wing suit diving, for mobile cardboard VR.
- Created POC for rocket league inspired local multiplayer arcade game.
- Prototyped and created multiple games in varying genres – simulation, puzzle, and mobile trivia.

ACHIEVEMENTS AND HONORS

Achievements

- Microsoft azure ninja cat badge in week of AI 2019. [Follow]
- My game was selected among top 20 games among 100s of other at Pocket Gamer Connect Bangalore 2016.
- Qualified for ACM-ICPC Asia regional consecutively 3 years, ranking under 200 among more than 1500 teams.
- Won 2nd prize in reverse engineering at Techwizard'13.
- Secured 2nd position in college level quiz on World environment day.

Extra-curricular Activities

- Director of Hackathons as part of UCL Tech Society.
- Delivered guest talk at UXIndia 2017 Bangalore on following topic "Platform agnostic UX/UI for AR/VR application". [Follow]
- Given workshop on augmented reality (AR) application organised by Apple Developer group (ADG) at Vellore Institute of Technology (VIT), Chennai. [Follow]
- President of the RJITGEEK coding community under Codechef campus chapter (2015-16).