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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.

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## EDUCATION & CERTIFICATION

<b>University College London (UCL), London</b> Master of Research (MRes) in Virtual Reality CGPA - pursuing	Sep'19-Sep'20
<b>Rajiv Gandhi Prodyogiki Vishwavidyalaya, Bhopal</b> Bachelor of Engineering in Information Technology CGPA – 7.33/10	Jul'12-Jun'16
<b>Computer Vision with OpenCV and Deep Learning</b> MOOC on Udemy [ <a href="#">Certificate</a> ]	Dec'19
<b>Computer Vision and Image Analysis</b> Microsoft course on edx.org [ <a href="#">Certificate</a> ]	Dec'18

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## SKILLS

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

**Industry Knowledge:** Virtual and Augmented Reality, Computer Graphics, Computer Vision, Differential Geometry, Game Development and Computer Networking.

**Tools/SDK/API:** Unity3D, OpenCV, WebGL, ARCore, Leap motion, Oculus, Vive, Vive SRanipal, Unity ECS, SFML, Boost, WebRTC, Kinect, Keras, nodeJS, libigl, Android Studio, FFMPEG, Photon Unity Netorking, Mapbox, Git, Azure compute, and Azure cognitive services API.

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## 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](#)]
  - 3D Mesh alignment/registration using ICP point-to-point and point-to-plane approach. [[Demo](#)]
  - Processing of 3D geometry of a mesh using Laplace operator for curvature analysis (Gaussian and mean with uniform and non-uniform discretization), Spectral analysis for Fourier reconstruction of mesh. [[Link](#)]
  - WebGL rendering using Path tracing: physically corrected Phong shading with BRDF and Quasi Monte Carlo approach using Halton sequence. [[Demo](#)]
  - Mixed reality project for Escape room experience – using Vive Pro for VR, Leap motion for hand tracking, vive trackers for props with 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](#)]
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## EXPERIENCE

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### 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 for geo-referenced localization).
- Exploring on possible use cases and integration of real-time IoT data and interactive user experiences within the platform.

### Staff Engineer

Sep'17 – Jun'19

*Imagine 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 on livestream, screen sharing, etc.
- Lead the 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 was responsible for the project R&D and features, such as – pipeline to import CT-scanned images, fluid simulation, plant safety maintenance (explosion simulation and integration of records from cloud).
- Developed feature for capturing 3D VR sessions, which records all actions, events, conversation (audio), and contents of the session. These recordings can then be replayed in offline mode and shared with other for reviewing purposes.
- 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.
- Created android native plugins for detecting and controlling UVC compliant camera over OTG port.

### 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 algorithm to extract wall mask, and Unity3D for visualization and integration of leap motion for user interaction. The application was targeted for intel NUC unit and deployed in stores.
- Developed immersive VR-experience of endangered wildlife species on HTC Vive using Unreal engine. The application was installed at Abu Dhabi Terminal 1 called virtual safari.
- 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 exporting and loading of 3D CAD files at runtime in Unity.

### Game Programmer Internship

Jan'16 – Nov'16

*All in a days play Pvt. Ltd. Mumbai*

- Prototyped and developed VR simulation game for wing suit diving, targeted for VR cardboard
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devices.

- Created a demo 2D arcade game “Future Ride” inspired from rocket league. The was targeted for local multiplayer category and was selected among top 10 games at Pocket Gamer Connect, Bangalore 2016.
- Prototyped and developed multiple games in varying genres – simulation, puzzles, and mobile trivia.

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## ACHIEVEMENTS AND HONORS

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### Achievements

- Microsoft azure ninja cat badge in week of AI 2019. [\[Follow\]](#)
- My game was selected among top 10 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, 2013.
- Secured 2nd position in college level quiz on World environment day , 2014.

### Extra-curricular Activities

- Director of Hackathons as part of UCL Tech Society 2019-20.
- 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 2017. [\[Follow\]](#)
- President of the RJITGEEK coding community under Codechef campus chapter (2015-16).