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## SUMMARY

I am enthusiastic about research and development with the latest technologies, especially with mixed reality and computer vision. I have experience in building cross-platform multiplayer application with enterprise standards and building visual SLAM systems for augmented reality.

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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, visual SLAM systems, Game Development and Computer Networking.

**Tools/SDK/API:** Unity3D, OpenCV, WebGL, ARCore, ARKit, Leap motion, Oculus, Vive, Vive SRanipal, Unity ECS, SFML, Photon Unity Netorking, Boost, libigl, g2o, ceres, DBow2, WebRTC, Kinect, Keras, nodeJS, Android Studio, FFMPEG, Mapbox, Git, Azure compute and cognitive services API.

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## PROJECTS

- Fusion of GNSS measurement into VSLAM Bundle Adjustment process for geo-referenced positioning.
  - Smart city project: used VSLAM to reinforce GPS tracking for real-time cross-platform collaboration in mixed reality application, supporting features like - virtual guides, freehand drawing, voice conferencing, and loading runtime contents. [[Demo](#)]
  - 3D Mesh alignment/registration using ICP point-to-point and point-to-plane methods. [[Demo](#)]
  - 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 – Aug'20

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

- Worked on the development of a novel mixed reality-based collaborative application supporting Augmented and Virtual Reality. The platform supports real-time collaboration and dynamic experiences on a geo-referenced map (from loosely coupled GPS and VSLAM). The proof of concept is presented for the Centres' smart city project of iNicosia.
- Created interactive user experiences within the platform and research on the integration of real-time data, such as- GIS and news feed.

### Staff Engineer

Sep'17 – Jun'19

*Imagine Software Pvt. Ltd. Hyderabad*

- Awarded as the best person in Technology for the year 2018.
- Worked in the core product team and took responsibility for the architecture and development of the product (Assist - AR-based cross-platform review and collaboration). It is used by clients such as – UTC, Ford, ABB and others. I also did R&D for core features improving video streaming latency and bandwidth requirement, feature tracking on Livestream, screen sharing etc.
- Lead the VR collaboration project for a team of petro-scientists at Shell PLC. I was in charge for a 6 months long project, where I captured the requirements and coordinated between the client and internal team for development and delivery. I took care of the project R&D and features, such as – processing CT-scanned images, fluid simulation, and plant safety maintenance (explosion simulation and evacuation, and integration of machine records from the 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 others for reviewing purposes.
- Written platform native libraries to render out document files (PDF and DOCX) at run time and 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*

- I have created an interactive app for real-time visualization of new colour and patterns on a real wall surface. I have 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 deployed on the intel NUC unit and used in public stores.
- I have developed immersive VR-experience of endangered wildlife species for HTC VIVE using Unreal engine. The application was installed at Abu Dhabi Terminal 1 called virtual safari.
- I have developed and supervised multiple VR and AR projects for training, repair and inspection of mechanical machinery such as engine valve adjustment, servicing of the tractor, and electric scooter.
- Initiated the idea of a new product and created a proof of concept demo for marker-less tracking, annotations and virtual meeting space – for VR collaboration.

- Written a custom parser for exporting and loading of 3D CAD files in Unity at runtime.

### **Game Programmer Internship**

Jan'16 – Nov'16

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

- Prototyped and developed a VR simulation game for wingsuit diving, targeted for mobile VR cardboard devices.
- Created a 2D arcade game "Future Ride" inspired from rocket league. The game was targeted for local multiplayer category and was selected among top 10 games at Pocket Gamer Connect, Bangalore 2016.
- Created multiple prototype games in varying genres like – 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.
- Teaching Assistant for Programming 1 course for undergraduates at UCL 2020.
- Delivered guest talk at UXIndia 2017 Bangalore on the 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).

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## **REFERENCES**

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Available upon request.