

# VARUN SIDDARAJU

XR Systems Architect · Spatial AI & Embodied Intelligence · Author

Port Orchard, WA · varunsiddaraju@gmail.com · LinkedIn · GitHub · Google Scholar · Portfolio

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## PROFILE

XR systems architect with 10+ years building and deploying immersive spatial computing applications across enterprise, healthcare, and industrial sectors. Creator of the **Harmony framework** — a 5-layer ecosystem integrating multimodal context inference, cognitive load-aware interfaces, and explainable AI mediation for adaptive XR systems. Apress author, IEEE Best Paper Award recipient, and founder of VeeRuby Technologies with 50+ production XR systems shipped. Seeking opportunities in Spatial AI, embodied intelligence, or XR systems.

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## EDUCATION

### Master of Science — Electrical Engineering

Texas State University, TX · X-Reality Lab · Graduate Research Assistant · Thesis Fellowship

2016 – 2018

### Bachelor of Engineering — Electronics & Communication

Visvesvaraya Technological University, India

2011 – 2015

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## RESEARCH — HARMONY FRAMEWORK

Harmony is a 5-layer adaptive spatial computing ecosystem: *L0 Framework* → *L1 OpenSpatialAI Platform* → *L2 Harmony One* → *L3 Micro Apps* → *L4 Research & Prototypes*. Harmony One integrates four runtime layers: Perception → Cognition → Memory → Action.

### Active Thesis Branches

- B1 - Multimodal Context Inference: Fusing gaze, body pose, and task signals for continuous real-time user state modeling in XR.
- B2 - Cognitive Load-Aware Adaptation: Dynamic spatial UI reconfiguration driven by inferred cognitive load and attention state.
- B3 - Explainable AI Mediation: Transparent, opt-in AI intervention with user-auditable decision logs in spatial systems.

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## PROFESSIONAL EXPERIENCE

### XR + AI Researcher & Systems Thinker · VeeRuby — The AR VR Development Company · Seattle, WA Oct 2025 – Present

- Leading the Harmony framework — integrating spatial computing, generative AI, and multimodal interfaces for adaptive immersive environments.
- Designing and prototyping PoC systems across immersive classrooms, AI-mediated training simulations, and intelligent workspaces.
- Authoring research outputs including whitepaper drafts and Harmony framework specification documents.

### Program Manager — AI & XR Products & Services · Ong Innovations · Seattle, WA

Sep 2024 – Sep 2025

- Scaled AI/XR division from concept to multi-site operations; drove 40% increase in enterprise adoption.
- Directed LimitlessVR — AI + XR platform with conversational spatial agents; reduced development cycles by 25%.
- Secured \$50K in research funding; directed \$200K in investments yielding \$600K+ revenue growth.

### Product Manager, AR/VR Division · Ong Innovations · Seattle, WA

Jul 2023 – Aug 2024

- Delivered 50+ AR/VR projects across enterprise, education, and entertainment; managed 4 concurrent product lines.
- Launched LimitlessVR and Byldr (no-code XR platform); reduced delivery time by 30%.

### Chief Executive Officer · VeeRuby — The AR VR Development Company · Mysore, India

Apr 2022 – Jun 2023

- Led cross-border XR/AI company delivering enterprise solutions in automotive, healthcare, and industrial sectors.
- Defined product vision and go-to-market strategy; scaled team from 3 to 12 across U.S. and Indian operations.

**Lead Software Engineer** · Ong Innovations · Seattle, WA

Jan 2019 – Feb 2020

- Built proprietary XR tracking and spatial mapping system for a 4,000 sq ft free-roam multi-user environment (50+ simultaneous users).
- Developed 8 learning paths and 25 Azure XR SDK modules in direct collaboration with Microsoft.

**Research Associate / Graduate Research Assistant** · Texas State University · San Marcos, TX

Dec 2016 – Dec 2018

- Developed AR/VR applications for Microsoft HoloLens; contributed to 3 peer-reviewed publications in computer vision and mixed reality.
- Co-presented research at SXSW 2018 and IEEE Greentech Conference; applied MATLAB image processing in Unity 3D pipelines.

## PUBLICATIONS

<b>JOURNAL</b>	Koutitas, G., Siddaraju, V. K., & Metsis, V. (2020). In situ wireless channel visualization using augmented reality and ray tracing. <i>Sensors</i> , 20(3), 690. MDPI.
<b>CONF.</b>	Siddaraju, V. K., Koutitas, G., & Metsis, V. (2018). An augmented reality facet mapping technique for ray tracing applications. <i>IEEE ICDDT</i> , Athens, Greece. ★ Best Paper Award
<b>CONF.</b>	Siddaraju, V. K., & Koutitas, G. (2018). X-Reality Research Lab: Augmented reality meets Internet of Things. <i>IEEE VR Workshop</i> .
<b>BOOK</b>	Siddaraju, V. K. (2021). <i>Beginning Windows Mixed Reality Programming</i> (2nd ed.). Apress. ISBN 978-1-4842-6348-8.

## AWARDS & RECOGNITION

Best Paper Award — IEEE ICDDT Athens 2018 · Thesis Research Fellowship — Texas State University 2017 · Elevate Unnati Winner (LabXR) — Government of Karnataka 2020 · 10 Best AR/VR Startups to Watch — Silicon India 2021, 2023 · 52 Most Innovative VR Companies — VRARA 2022

## TECHNICAL SKILLS

<b>Platforms</b>	Unity 3D · Unreal Engine 5 · WebXR · OpenXR
<b>Headsets</b>	Microsoft HoloLens 1 & 2 · Meta Quest 2/3/Pro · HTC Vive / Vive Focus · PICO 4
<b>Spatial</b>	RealityCapture · Metashape · Azure Spatial Anchors · Vuforia · 3D Reconstruction
<b>AI &amp; Cloud</b>	Azure AI Services · Generative AI Agents · LLM Integration · Computer Vision APIs
<b>Development</b>	Python · C# · MATLAB · GitHub · Agile · Cross-border Team Leadership

## SELECTED PROJECTS

**Healthcare & Life Sciences:** XR Medical Viewer · Human Anatomy MR · Oral Saliva Collector Showcase

**Industrial & Training:** Sweeper Truck Training · VR Mining Simulation · VR Welding (Meta Quest 2) · Industrial XR - Halliburton

**Education & K-12:** LabXR Virtual Laboratory · Periodic Table MR Game · XR Recycle Game · Gorillazilla XR Dev Course

**Architecture & Urban:** XR City Model Viewer · XR Deck Construction · Multiuser 3D Model Viewer · GIS Data Visualization

**Space & Research:** NASA Mars Rover VR Experience · NASA XR + HoloLens 2 Projects

## OPEN RESEARCH QUESTIONS

- How can XR systems infer and track continuous cognitive state from multimodal sensor streams in real time?
- What persistent memory architectures enable genuine cross-session personalization without model retraining?
- How should AI interventions in XR environments be made explainable, opt-in, and user-auditable?