

# Rajkumar Darbar

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🌐 <https://rajkdarbar.github.io/>

📍 Paris, France

Education	<p><b>Ph.D. in Computer Science</b> Dec 2017 – Sept 2021 <i>INRIA Bordeaux &amp; Université de Bordeaux, France</i></p> <p>Thesis: <i>Extending Interaction Space in Augmented Reality: Contributions in Optical See-Through and Projection-Based Augmented Environments</i></p> <p>Committee: Martin Hachet (advisor), Pascal Guitton (co-advisor), Marcos Serrano, Gilles Bailly, Caroline Appert, Céline Coutrix</p> <p><b>M.S. (by Research) in Computer Science</b> Jan 2013 – May 2016 <i>Indian Institute of Technology Kharagpur, India</i></p> <p>Thesis: <i>Interactions with Smartphones and Smartwatches: Context-Awareness, Text Entry Interfaces, and Input Beyond Touch</i></p> <p><b>B.Tech in Information Technology</b> Aug 2008 – June 2012 <i>West Bengal University of Technology, Kolkata, India</i></p>
Experience	<p><b>Computer Graphics &amp; Engine Development (Independent)</b> Jan 2025 – Dec 2025</p> <ul style="list-style-type: none"><li>Implemented geometric primitives and real-time rendering pipelines, including Bézier curves, lighting models, shadow mapping, and deferred rendering.</li><li>Built ray tracing and Monte Carlo path tracing systems with GPU compute shaders.</li><li>Developed physics and collision systems including broad- and narrow-phase detection, spatial acceleration structures, and real-time cloth simulation.</li></ul> <p><b>Postdoctoral Researcher</b> Apr 2022 – Aug 2024 <i>CNRS, Paris, France</i></p> <p>Built a multi-user VR system with shared eye-gaze cues for molecular visualization.</p> <p><b>Summer Intern</b> June 2016 – Jan 2017 <i>Samsung R&amp;D Institute, Bangalore, India</i></p> <p>Implemented a smart-ring-based interaction system for IoT device control.</p>
Research Interests	Human-Computer Interaction (HCI) • Augmented Reality (AR) • Virtual Reality (VR)
Selected Publications	<p>[1] <b>GazeMoIVR: Sharing Eye-Gaze Cues in a Collaborative VR Environment for Molecular Visualization</b> R. Darbar, H. Santuz, A. Taly, M. Baaden <i>International Conference on Mobile and Ubiquitous Multimedia (MUM)</i>, 2024</p> <p>[2] <b>OnArmQWERTY: An Empirical Evaluation of On-Arm Tap Typing for AR HMDs</b> R. Darbar, X. Hu, X. Yan, Y. Wei, H.-N. Liang, W. Xu, S. Sarcar <i>ACM Symposium on Spatial User Interaction (SUI)</i>, 2024</p> <p>[3] <b>HoloCMDS: Investigating Around Field-of-View Glanceable Commands Selection in AR-HMDs</b> R. Darbar, A. Prouzeau, M. Hachet <i>IEEE VR Abstracts and Workshops (VRW)</i>, 2022</p> <p>[4] <b>Exploring Smartphone-enabled Text Selection in AR-HMD</b> R. Darbar, A. Prouzeau, J. Odicio-Vilchez, T. Lainé, M. Hachet <i>Graphics Interface Conference (GI)</i>, 2021</p>

- [5] **DroneSAR: Extending Physical Spaces in Spatial Augmented Reality using Projection on a Drone**  
R. Darbar, J. Sol Roo, T. Lainé, M. Hachet  
*International Conference on Mobile and Ubiquitous Multimedia (MUM)*, 2019
- [6] **PressTact: Side Pressure-Based Input for Smartwatch Interaction**  
R. Darbar, P. Kr. Sen, D. Samanta  
*ACM CHI Extended Abstracts (CHI EA)*, 2016
- [7] **Using Hall Effect Sensors for 3D Space Text Entry on Smartwatches**  
R. Darbar, P. Kr. Sen, P. Dash, D. Samanta  
*International Conference on Intelligent Human Computer Interaction (IHCI)*, 2015
- [8] **SurfaceSense: Smartphone Can Recognize Where It Is Kept**  
R. Darbar, D. Samanta  
*Indian Conference on Human Computer Interaction (IndiaHCI)*, 2015

#### Technical Reports

**RingIoT: A Smart Ring Controlling Things in Physical Spaces**  
R. Darbar, M. Choudhury, V. Mullick  
*Samsung R&D Institute — Internship Report*, 2016

#### Technical Skills

- **Programming & Scripting Languages:** C#, HLSL (Compute Shaders), Java, Python
- **Development Tools:** Unity, Visual Studio, Android Studio, Git
- **Hardware Expertise:** HTC Vive, HoloLens, Arduino, OptiTrack
- **UX Research:** R/RStudio, SPSS, thematic analysis of user studies

#### Awards & Fellowships

- **INRIA Bordeaux:** Ph.D. fellowship.
- **Microsoft Research India:** Travel grant to attend CHI 2016.
- **SRIC-IIT Kharagpur:** Fellowship for M.S. (by Research) studies.

#### Extra-Curricular Activities

- **Paper Reviewer:** CHI (2023, 2025), VR (2025), VRST (2022), SUI (2022), INTERACT (2019).
- **Student Volunteer:** UIST (2018), MobileHCI (2018).
- **Teaching Assistant:** AR/VR course, Université de Bordeaux (2019–2020).
- **SIGCHI Summer School Participant:** Research Methods for Text Entry and Interaction Techniques, IIT Bombay (2018).