

PRASHANT RAWAT

Research Assistant/PhD Candidate
VERTEX Lab, Be-HCI Lab, Dalhousie University, Halifax, Canada

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EDUCATION

- Dalhousie University, Canada** 2022 - 2026
Doctor of Philosophy, Computer Science

Research Interests: Human-Computer Interaction, 3D User Interface, Virtual Reality/Augmented Reality, Computer Vision, Spatial Thinking, Artificial Intelligence, and Machine Learning

Final Grade: A+

Thesis Title: Designing Multimodal Interfaces for Spatial Thinking Through Hand, Voice, and Gaze Interaction in Virtual Reality
Course Work: Research Methods and Statistics, Human-Computer Interaction, Ubiquitous Computing
- London Metropolitan University, United Kingdom** 2014 - 2016
Master of Science, Computer Science

Final Grade: Second Upper Class

Thesis Title: Smart Home-Automated System using IOT devices with Raspberry Pi.
Course Work: Research and Development Skills, Artificial Intelligence Applications, Cloud and Pervasive Computing, Discrete Structures and Algorithms, Relational and Object Database Development
- Lovely Professional University, India** 2009 - 2013
Bachelor of Technology in Computer Science and Engineering

Final Grade: 8.32 CGPA (Batch Topper)

Thesis Title: Developed website on payroll in ASP.NET in frontend and SQL (DBMS) in backend.
Course Work: Analysis and Design of Information System, Artificial Intelligence, Operating System, DBMS/RDBMS, SOL Server/PLSQL, Networking, Business Analytics, Software component, etc.
- Shree Guru Ram Rai Public School, India** 2008 - 2009
Senior Secondary high school (12th standard)

Final Grade: 80.04 % (Second Topper)

Course Work: Computer Science, Mathematics, English, Physics, Chemistry

PROFESSIONAL EXPERIENCES

Research Assistant September 2022 – Present
VERTEX Lab, Be-HCI Lab, Faculty of Computer Science, Dalhousie University, Canada

Working with Professor Mayra Barrera Machuca Donaji and Professor Lizbeth Escobedo to conduct high impact research in Multimodal User Interfaces, Spatial Thinking, Artificial Intelligence, Virtual Reality/Augmented Reality, Ubiquitous Computing, and to publish research findings in top-tier and reputable international journals and conference proceedings

Duties:

- Design and develop interactive prototypes and innovative user interfaces for VR/AR applications using Unity and related development tools.
- Perform comprehensive data analysis on user behavior and study results, applying both quantitative and qualitative research methods.
- Plan, execute, and manage user studies to evaluate the effectiveness and usability of novel interfaces in immersive environments.

- Conduct systematic literature reviews to inform research directions and identify emerging trends in VR/AR and HCI domains.
- Collaborate with interdisciplinary teams to co-author research publications and contribute to conference submissions.

MACS Technical Interviewer

November 2023 – Present

Faculty of Computer Science, Dalhousie University, Canada

Working with graduate administrators and recruiting MACS candidates as part of the selection committee. Assessing the technical, communication, and academic competencies of candidates at the university.

Duties:

- Conduct technical interviews for applicants to the Master of Applied Computer Science (MACS) program, evaluating candidates across communication, problem-solving, and programming domains.
- Assess applicants' ability to articulate technical concepts clearly and effectively in English, the primary language of instruction.
- Evaluate programming proficiency through live coding and algorithmic problem-solving during 45-minute virtual interviews.
- Provide fair and consistent assessment of candidates from diverse academic backgrounds, including non-Computer Science majors.
- Offer constructive feedback and objective evaluations to inform the admission decisions by the graduate committee.
- Coordinate with the admissions team to ensure timely scheduling and execution of applicant interviews across global time zones.

Graduate Teaching Assistant & Marker

September 2022 – Present

Faculty of Computer Science, Dalhousie University, Canada

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| ● CSCI 3160 (Designing User Interfaces) | January 2026 – April 2026 |
| ● CSCI 8892 (Co-op Work Term Projects) | January 2026 – April 2026 |
| ● CSCI 5410 (Serverless Data Processing) | January 2026 – April 2026 |
| ● CSCI 5408 (Data Management, Warehousing, and Analytics) | January 2026 – April 2026 |
| ● CSCI 8893 (Co-op Work Term Projects) | September 2025 – December 2025 |
| ● DGIN 5001 (Capstone in Digital Innovation) | May 2025 – August 2025 |
| ● CSCI 4169/6307 (Usable Security and Privacy) | January 2025 – April 2025 |
| ● CSCI 4163/6610 (Human-Computer Interaction) | January 2025 – April 2025 |
| ● CSCI 1170 (Introduction to Web Design and Development) | January 2025 – April 2025 |
| ● CSCI 4262/6615 (Augmented Reality & Virtual Reality) | September 2024 – December 2025 |
| ● CSCI 1170 (Introduction to Web Design and Development) | September 2024 – December 2025 |
| ● CSCI 4262 (Introduction to Augmented & Virtual Reality) | January 2024 – April 2024 |
| ● CSCI 1170 (Introduction to Web Design and Development) | January 2024 – April 2024 |
| ● CSCI 4126/6609 (Ubiquitous Computing) | September 2023 – December 2023 |
| ● CSCI 1170 (Introduction to Web Design and Development) | September 2023 – December 2023 |
| ● CSCI 1170 (Introduction to Web Design and Development) | January 2023 – April 2023 |
| ● CSCI 1170 (Introduction to Web Design and Development) | September 2022 – December 2022 |

Mitacs Globalink Research Mentor

May 2025 – Present

Mitacs, Canada

Supported 8 Global Research Interns during summer internship with university orientation, weekly guidance, clarification of their research goals in collaboration with supervisors, organization of social events, and achievement of weekly milestones.

Duties:

- Provided pre-arrival and arrival support to international research interns, including welcome packages and orientation assistance.
- Conducted weekly check-ins to address academic, social, and logistical concerns of interns.
- Assisted interns with local administrative tasks such as banking, transit, and housing.

- Facilitated social integration through event planning and community engagement activities.
- Acted as a liaison between interns, academic supervisors, and the Mitacs coordination team.
- Ensured smooth transition and ongoing support for interns to acclimate to academic and cultural life in Canada.
- Maintained communication and resolved issues efficiently, promoting a positive international research experience.

Assistant Professor - Senior Scale

July 2017 – August 2022

Department of Computer Science, University of Petroleum and Energy studies, India

Taught both undergraduate and graduate courses, participated in course development at both the undergraduate and graduate-level, supervised and mentored students, supported Faculty's initiatives, established a strong externally funded research program, fostered existing and new collaborations with government, industry, and with other members of University's research community.

Course: Computer Graphics, Data Mining, Machine Learning, Deep Learning, Python Programming and Internet of Things

Duties:

- Taught undergraduate and postgraduate courses in Computer Science, including Computer Graphics, Data Mining, Machine Learning, Deep Learning, Python Programming, and Internet of Things (IoT).
- Designed and developed course materials, assignments, and lab sessions with a focus on practical and industry-relevant applications of Artificial Intelligence techniques.
- Mentored student groups on Machine Learning and IoT-based academic and capstone projects, guiding them through the end-to-end development lifecycle.
- Conducted hands-on lab sessions to reinforce theoretical concepts through experiential learning, with tools such as Python, TensorFlow, and Arduino/Raspberry Pi for IoT.
- Organized and delivered departmental seminars and workshops on emerging topics in Machine Learning and Deep Learning to enhance students' and faculty awareness of current research trends.
- Contributed to curriculum development efforts to integrate AI and data science modules into core and elective course offerings.

Software Developer

July 2013 – August 2014

WT IT Solutions Private Limited, India

Build and maintain applications and systems across various industries, such as technology, finance, healthcare, and gaming, including writing and testing codes, troubleshooting issues, and collaborating with teams to develop efficient, scalable software solutions.

Duties:

- Developed responsive and user-friendly web applications using HTML5/HTML4, CSS3/CSS2, JavaScript jQuery, PHP (Core & Advanced), and frontend frameworks including ReactJS and AngularJS.
- Collaborated directly with clients to gather and analyze usability specifications, transforming requirements into functional and visually appealing website layouts and user interfaces.
- Designed and implemented custom features such as interactive calculators, embedded media players, and animated elements using Flash and JavaScript.
- Created, edited, and maintained CSS files, optimized web graphics using Adobe Photoshop and Illustrator CS5, and managed portal layouts through Adobe Dreamweaver CS5.
- Ensured cross-browser compatibility and adherence to W3C accessibility standards across all web pages and portals.
- Coordinated with project managers and designers to refine specifications and deliver polished, client-centric web solutions within project timelines.

TECHNICAL SKILLS

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| Programming Languages: | Python, C#, Java, JavaScript (ES6+), C, C++, PHP, SQL, R, MATLAB |
| Frameworks & Libraries: | Unity3D, ReactJS, AngularJS, Node.js, TensorFlow, PyTorch, Keras, OpenCV |
| Databases & Data Engineering: | MySQL, MongoDB, Firebase Realtime Database, Oracle, Azure SQL Database |
| AR/VR & 3D Tools: | Oculus SDK, OpenXR, ARCore, ARKit, Blender, VRTK, MRTK, Unity |
| Cloud & Analytics Platforms: | Microsoft Azure (Databricks, Synapse, App Service), Power BI |
| Research & Data Analysis Tools: | SPSS, NVivo, Figma, Jupyter Notebook, Google Colab, Anaconda, RStudio |
| Software Development Practices: | Agile methodologies, Git/GitHub version control, RESTful API design |
| Development Environments: | Visual Studio, Visual Studio Code, Android Studio, Spyder, Jupyter Hub |

HONOURS AND AWARDS

- **Certified Cyber Security Professional – Quick Heal Academy (QHA) (July 2018)**
Achieved certification as a QHA0111: QHA Certified Cyber Security Professional (ID: PQ0306-002), validating advanced skills in cybersecurity.
- **University Honor Roll – College Topper (2009–2013 Batch) (July 2010)**
Recognized with University Honor Roll for academic excellence as the College Topper during undergraduate studies

RESEARCH GRANTS & SCHOLARSHIPS

- **Fully Funded Research Scholarship – VERTEX Lab, Dalhousie University (2022 – Present)**
Awarded a fully funded research scholarship (CAD \$32,000/year for 4 years) to investigate naturalistic 3D User Interfaces (3DUI) using hand gestures for 3D design within Virtual Reality.
- **IDEA Scholarship – IEEE VGTC, ISMAR 2022 (October 2022)**
Awarded the prestigious IEEE VGTC IDEA Scholarship at the 21st IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2022), Singapore. The award included a full registration waiver (€1500) for online participation.
- **SEED Grant – Funded Project (March 2020)**
Principal Investigator of the project “Robust View Invariant Recognition of Hand Postures and their Spatio-Temporal Sequences for Acoustically Disabled People”, supported with sanctioned funding of INR 85,000.

SERVICES

Academic Committees

2026 - **Associate Chair**-Poster Track of ACM CHI Conference on Human Factors in Computing Systems 2026, Barcelona - Spain

2026 - **Lead-organizer** of a Workshop of Novel Input Devices and Interaction Techniques (NIDIT 2026) at 33rd IEEE Conference on Virtual Reality and 3D User Interfaces, Daegu - South Korea

2026 - **Student Volunteer Chair**, Virtual Reality Software and Technology (VRST 2025), Montreal, Canada

2025 - **Co-organizer** of a Workshop of Novel Input Devices and Interaction Techniques (NIDIT 2025) at 32nd IEEE Conference on Virtual Reality and 3D User Interfaces, Saint - Malo, France

2025 - **Review Editor** for ACM Designing Interactive Systems (DIS 2025), Funchal, Madeira

2023 - **Review Editor** for International Journal of Security and Networks (IJSN 2023), Inderscience Publishers

2023 - **Review Editor** for Co-organizer of IEEE Conference on Virtual Reality and 3D User Interfaces (IEEEVR 2023), Shanghai, China

2019 - **Co-organizer** of a 5th International Conference of Next Generation Computing Technologies on Computational Intelligence (NGCT 2019), India

2018 - **Co-organizer** of a 4th International Conference of Next Generation Computing Technologies on Computational Intelligence (NGCT 2018), India

PUBLICATIONS

Spatial Visual Guides: Supporting Spatial Thinking Through Multimodal Hand Interaction in VR, (**Under review**)

Prototyping as Epistemic Work: A Collaborative Autoethnography of Prototyping Naturalistic Hand Interaction, (**Under review**)

Ranapurwala, Amaan and Zhang, Jialin and **Rawat, Prashant** and Wehbe, Rina and Batmaz, Anil and Barrera Machuca, Mayra Donaji. A Virtual Reality OptoKinetic Drum. *In Proceedings of the 2025 ACM Symposium on Spatial User Interaction (SUI'25) Montreal, Canada*, doi: 10.1145/3694907.3765943

Rawat, Prashant and Barrera Machuca, Mayra Donaji. Spatial Hand Actions: Exploring the Hand Actions used to Represent Spatial Thinking for 3D Assembling Tasks. *In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI'25) Yokohama, Japan*, doi: 10.1145/3706598.3713424

Barrera Machuca, Mayra D. and **Rawat, Prashant** and Grinyer, Kristen and Batmaz, Anil Ufuk and Banic, Amy C. and Ortega, Francisco and Teather, Robert J. and Stuerzlinger, Wolfgang. Workshop on Novel Input Devices and Interaction Techniques 2025. *2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, Saint Malo, France, 2025, pp. 324-325, doi: 10.1109/VRW66409.2025.00077

Rawat, Prashant and Turkmen, Rumeysa and Nwagu, Chukwuemeka and Sunday, Kissinger and Barrera Machuca, Mayra Donaji. Evaluating Voxel-Based Graphical Passwords for Virtual Reality. *2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, Orlando, FL, USA, 2024, pp. 12-17, doi: 10.1109/VRW62533.2024.00009

Turkmen, Rumeysa and Nwagu, Chukwuemeka and **Rawat, Prashant** and Riddle, Poppy and Sunday, Kissinger and Machuca, Mayra Barrera. Put your glasses on: A voxel-based 3D authentication system in VR using eye-gaze. *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, Shanghai, China, 2023, pp. 947-948, doi: 10.1109/VRW58643.2023.00316

Rawat, Prashant and Kane, Lalit and Goswami, Mrinal and Jindal, Avani and Sehgal, Shriya. A review on vision-based hand gesture recognition targeting RGB-Depth sensors. *International Journal of Information Technology & Decision Making (IJITDM 2023)* 22:01, 115-156, doi: 10.1142/S0219622022300026

Goswami, Mrinal and Pal, Jayanta and Tanwar, Rohit and **Rawat, Prashant**. A modular approach to design ternary content addressable memory architecture in quantum dot cellular automata. *International Journal of Information Technology (IJIT 2022)* 14 : 1, 41-47, doi: 10.1007/s41870-021-00836-2

Goswami, Mrinal and Tanwar, Rohit and **Rawat, Prashant** and Sen, Bibhash. Configurable memory designs in quantum-dot cellular automata. *International Journal of Information Technology (IJIT 2021)* 13, 1381–1393, doi: 10.1007/s41870-021-00687-x

Rawat, Prashant and Dewangan, Bhupesh and Jain, Anurag and Arora, Nitin. Image Steganalysis of Improvised Algorithms Based on Pixel Difference Pattern and Random Embedding. *Pramana Research Journal (PRJ 2018)* 8:9, 147-163, doi: 10.32968/2249-2976

Arora, Nitin and **Rawat, Prashant** and Dewangan, Bhupesh and Jain, Anurag. Facial Recognition System for Class Room Attendance using Convolutional Neural Network Technique. *International Journal of Research in Engineering, IT and Social Sciences (IJREIS 2018)* 8:10, 39-42

Rawat, Prashant and Modal, Prasenjit. Interview Preparation to Data Scientist Role : An emerging profile. Notion Press; 1st edition (27 December 2021), link:

https://www.amazon.in/Interview-Preperation-Data-Scientist-Role/dp/B09P8KJK4B/ref=sr_1_2?qid=1666327788&refinements=p_27%3APrashant+Rawat&s=books&sr=1-2