

SONIA RAYCHAUDHURI

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I am a Ph.D. candidate in Computer Science at Simon Fraser University with a strong research background in deep learning, reinforcement learning, embodied AI, and robotic navigation. I have authored multiple research papers and presented at top-tier, peer-reviewed conferences. During my Research Internship at the Boston Dynamics AI Institute, I developed a novel approach called Natural Language grounded SLAM (NL-SLAM) and demonstrated its zero-shot capabilities on a real Spot robot. Previously, as a Senior Software Engineer, I built a strong technical and engineering foundation. I am passionate about advancing embodied AI research by applying cutting-edge AI techniques to deliver innovative and impactful solutions.

PhD Advisor: Prof. [Angel Chang](#)

Affiliations: [Simon Fraser University](#) ([3dlg-hcvc lab](#), [GrUVi Lab](#))

Collaborators: Prof. [Manolis Savva](#), Prof. [Bernadette Bucher](#), [Duy Ta](#), [Unnat Jain](#) & more

Skills: Reinforcement Learning, Deep Learning, Visual SLAM, Natural Language Understanding, Python, PyTorch.

Keywords	embodied ai, semantic navigation, multi-object navigation, vision and language navigation, reinforcement learning, computer vision, robotic vision, robotic navigation, natural language understanding
Publications	<p><u>Semantic Mapping in Indoor Embodied AI - A Comprehensive Survey and Future Directions</u> S. Raychaudhuri, A. X. Chang arxiv</p> <p><u>NL-SLAM for OC-VLN: Natural Language Grounded SLAM for Object-Centric VLN</u> S. Raychaudhuri, D. Ta, K. Ashton, A. X. Chang, J. Wang, B. Bucher arxiv website (<i>under review ICRA 2025</i>)</p> <p><u>Language-driven spatially-aware Multi-Object Navigation</u> S. Raychaudhuri, E. Cancelli, T. Campari, L. Ballan, M. Savva, A. Chang. (in progress)</p> <p><u>R3DS: Reality-linked 3D Scenes for Panoramic Scene Understanding</u> Q. Wu, S. Raychaudhuri, D. Ritchie, M. Savva, A. Chang ECCV 2024 [project]</p> <p><u>MOPA: Modular Object Navigation with PointGoal Agents.</u> S. Raychaudhuri, T. Campari, U. Jain, M. Savva, A. Chang.</p>

WACV 2024 [[project](#)] [[paper](#)]

Retrospectives on the Embodied AI Workshop.

M. Deitke, D. Batra, Y. Bisk, T. Campari, A. Chang, D. Chaplot, et al.
[[arXiv 2022](#)]

Language-Aligned Waypoint (LAW) Supervision for Vision-and-Language Navigation in Continuous Environments.

S. Raychaudhuri, S. Wani, S. Patel, U. Jain, A. Chang.
EMNLP 2021 [[project](#)]

Motion Annotation Programs: A Scalable Approach to Annotating Kinematic Articulations in Large 3D Shape Collections.

X. Xu, D. Charatan, S. Raychaudhuri, H. Jiang, M. Heitmann, V. Kim, S. Chaudhuri, M. Savva, A. Chang, and D. Ritchie.
3DV 2020 [[project](#)]

Teaching
Experience

- Graduate Teaching Assistant, Natural Language Processing 2020,2021
- Graduate Teaching Assistant, Natural Language Understanding 2021

Academic
Service / Peer
Review

Organized workshops: co-hosted of [MultiON challenge](#) for [Embodied AI Workshop](#) at CVPR 2022, 2023, 2024.

Reviewed for international conferences - ICRA, IROS, RA-L, CVPR, ICCV, ACL ARR, CRV, WACV, TPAMI, SIGGRAPH, SIGGRAPH Asia, IJCV.
Organized student-led groups, mentored undergraduate and graduate students, organized several reading groups and research talks.

Awards /
Recognition

- Outstanding TA Award by the CS SFU [2022]
- Amii AI Week Talent Bursary Recipient [2022]
- Selected for CRA-WP Grad Cohort for Women [2021, 2022]
- Graduate Fellowship, SFU [2019, 2021, 2022]
- Helmut & Hugo Eppich Family Graduate Scholarship, SFU [2021]

Education

- Ph.D. (Computer Science), Simon Fraser University, Canada (2020-present)
- Bachelor of Engineering (Information Technology), IIST, India (2003-2007)

Industry
Experience

- Boston Dynamics AI Institute, Research Intern (Jan-Jun 2024)
- Ericsson India Global Services Pvt. Ltd, Senior Software Engineer (2011–2019)
- Tata Consultancy Services Pvt. Ltd., India, Software Engineer (2007–2011)