

Sonia Raychaudhuri

PhD Candidate · Embodied AI · Simon Fraser University, Canada

advised by Prof. Angel X. Chang

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Research Focus

Pushing the boundaries of intelligent agents that can reason, plan and act in the physical world using vision, language and spatial understanding.

Key Projects

- **Zero-shot Object-Centric Instruction Following: Integrating Foundation Models with Traditional Navigation** — *Robotics and AI Institute (RAI) Internship, 2024* [Project]
Developed a language-grounded navigation framework combining foundation VLMs with classical planning. Demonstrated zero-shot navigation on Spot robot.
- **LangNavBench: Evaluation of Natural-Language Understanding in Semantic Navigation** — *arXiv, 2025 (In submission)* [Project]
Designed a diagnostic benchmark for language understanding in semantic navigation agents. Proposed a novel multi-layer feature map with spatial reasoning capability.
- **MOPA: Modular Object Navigation with PointGoal Agents** — *WACV 2024* [Project]
Proposed modular policy for longer-horizon multi-object navigation. SOTA generalization to novel scenes and objects.
- **Language-Aligned Waypoint (LAW) Supervision for Vision-and-Language Navigation in Continuous Environments** — *EMNLP 2025* [Project]
Designed a novel language-aware supervision scheme for vision-and-language navigation (VLN) to bring the agent back on path.
- **Semantic Mapping in Indoor Embodied AI – A Survey on Advances, Challenges, and Future Directions** — *arXiv, 2025 (In submission)*
Surveyed semantic map representations in embodied AI and robotics, with a focus on challenges and future research directions.

Research Themes

Natural Language Understanding · Foundation Models · Vision-Language Navigation · Semantic Mapping · Deep RL · Embodied Reasoning · Robotic Navigation

Looking Ahead

Seeking Research Scientist or Applied Scientist roles in industry labs focused on multimodal learning, generative AI, foundation models, robotics or embodied AI research. Open to opportunities starting Fall 2025 and Spring 2026.

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