

Saksham Bhutani

PhD Student, Computer Science, Columbia University

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EDUCATION

Columbia University

PhD in Computer Science (Advisor: Xia Zhou)

Sep 2026 – Present

Carnegie Mellon University

MS in Electrical and Computer Engineering; GPA: 3.96/4.0

May 2026

Vellore Institute of Technology, Vellore

BTech in Electronics and Communication Engineering; GPA: 3.95/4

Jul 2023

JOURNAL PUBLICATIONS

*Equal contribution; shared first authorship.

- [j1] **Bhutani, S.**, Elgendi, M., & Menon, C. **Preserving Privacy and Video Quality through Remote Physiological Signal Removal.** *Communications Engineering*, 4, 66 (2025). [DOI](#)
- [j2] Elgendi, M.*, Yu, A.*, **Bhutani, S.***, & Menon, C. **Balancing Cardiac Privacy with Quality in Video Recordings.** *Communications Medicine*, 5, 486 (2025). [DOI](#)
- [j3] **Bhutani, S.**, Alian, A., Fletcher, R. R., Bomberg, H., Eichenberger, U., Menon, C., & Elgendi, M. **Vital signs-based Healthcare Kiosks for Screening Chronic and Infectious Diseases: A Systematic Review.** *Communications Medicine*, 5, 28 (2025). [DOI](#)
- [j4] Perumal, P. S.*, Wang, Y., Sujasree, M., Tulshain, S.*, **Bhutani, S.***, Suriyah, M. K., & Raju, V. U. K. **LaneScanNET: A Deep-Learning Approach for Simultaneous Detection of Obstacle-Lane States for Autonomous Driving Systems.** *Expert Systems with Applications*, 120970 (2023). [DOI](#)
- [j5] Maheshkumar, S., Perumal, P. S., Viswanathan, R., Raj, C., Dar, M. S., Wang, Y., **Bhutani, S.**, Raju, V. U. K., & Suriyah, M. K. **5G-enabled interactive sugarcane protection networks for farmers and experts: Custom sugarcane dataset trained SPIDCNet for under-canopy sugarcane insect and disease detection.** *Smart Agricultural Technology*, 14 (2026). [DOI](#)
- [j6] Verma, P., **Bhutani, S.**, Srividhya, S., Karthikeyan, J., & Tong, C. S. **Review of Internet of Things Towards Sustainable Development in Agriculture.** *Journal of Critical Reviews*, 7(3), 148–151 (2020). [DOI](#)

MANUSCRIPTS UNDER REVIEW

- [p1] Elgendi, M.*, Rolland-Pieque, E.*, **Bhutani, S.***, & Menon, C. **Anatomically grounded facial region selection for robust and reproducible remote heart rate estimation.** Submitted to *npj Bioengineering* (2026).
- [p2] Yuan, K., Liu, F. Y., Xiao, T., Song, Y., Shen, C., **Bhutani, S.**, Chan, J., & Kumar, S. **Active noise cancellation on open-ear wearable devices.** Submitted to *Nature Sensors* (2026).
- [p3] Shrivastava, A., Adhikary, R., **Bhutani, S.**, Mittal, S., Goel, M., & Batra, N. **ApneaEye: Scalable, Non-Contact Screening Tool for Sleep Apnea using Thermal Imagery.** Submitted to *MobiCom* (2026).

SELECTED PRESENTATION

- [t1] **Bhutani, S.**, & Katewa, V. **Fault-Tolerant Multi-Modal Sensor Fusion for Autonomous Driving.** CyPhySS (2024). **Best Poster Award.** [Poster](#)

SELECTED HONORS AND AWARDS

Grand Prize , SF Hackathon (Remy)	2026
Graduate Scholarly Project Grant, Carnegie Mellon University	2026
Grand Prize , Google DeepMind AI Agents Hackathon (Autonomiq)	2025
Best Poster Award, Generative AI (10-623), CMU (FocusDAM)	2025
Kotak AI-ML Pre-doctoral Fellowship, Indian Institute of Science	2023
1st in Design Report and Technical Presentation; 3rd Overall, SAE Aerodesign East	2022
UNDP COVID-19 Impact Award	2020

RESEARCH EXPERIENCE

Carnegie Mellon University <i>Graduate Research Assistant, Robotic Caregiving and Human Interaction Lab</i> Advisor: Zackory Erickson. Designed wearable sensors and multimodal ML for scratch detection and intensity estimation.	Aug 2025 – Aug 2026
Carnegie Mellon University <i>Graduate Research Assistant, Semantic Signals and Smash Lab</i> Advisors: Justin Chan, Mayank Goel, and Swarun Kumar. Developed open-ear noise cancellation [p2] and thermal-video models for respiration and sleep apnea monitoring [p3].	May 2025 – Aug 2025
Khalifa University <i>Visiting Researcher, Healthcare Engineering Innovation Group</i> Advisor: Mohamed Elgendi. Developed reversible physiological-signal removal for privacy-preserving facial video [j2] [p1].	Nov 2024 – Jan 2025, Dec 2025 – Jan 2026
Indian Institute of Science <i>Pre-doctoral Fellow, Robert Bosch Centre for Cyber-Physical Systems</i> Advisor: Vaibhav Katewa. Developed fault-injection pipelines and robust LiDAR–RGB fusion for autonomous driving [t1].	Jul 2023 – Nov 2024
ETH Zürich <i>Research Intern, Biomedical and Mobile Health Technology Research Group</i> Advisors: Mohamed Elgendi and Carlo Menon. Developed contactless health kiosks [j3] and video algorithms for physiological-signal privacy [j1].	Jun 2022 – Oct 2022
Vellore Institute of Technology <i>Research Assistant, Automotive Research Centre</i> Advisor: P. Shummuga Perumal. Designed multi-task models for object detection, lane segmentation, and lane-change prediction [j4].	May 2021 – May 2022

SELECTED PROJECTS

- **Remy** (2026). Built an ESP32 camera-based kitchen assistant for inventory tracking and hands-free cooking guidance using YOLO, CLIP, and VLM inference. [Project](#)
- **FocusDAM** (2025). Built lightweight modules for region-specific vision-language captioning; improved positive-region accuracy by 21.3% over DAM-3B. [Code](#)
- **Autograding Platform** (2026–Present). Built a multi-agent LLM grading system with rubric-based feedback and human review, used by five CMU courses. [Project](#)
- **Argus CubeSat** (2025–Present). Developed solar-charging controller software and LoRa communications for a 1U vision-based orbit-determination satellite. [Project](#)
- **Autonomiq** (2025). Built an on-device automotive AI agent using OBD-II diagnostics and Gemma 3n to diagnose and recover from software faults. [Project](#)

TEACHING EXPERIENCE

Autonomous Robotics I (18-442/18-842) , Carnegie Mellon University	Spring 2026
Embedded Machine Learning (18-444/18-844) , Carnegie Mellon University	Fall 2025
Introduction to Amateur Radio (18-059) , Carnegie Mellon University	Spring 2025
Machine Learning in 5G Communication , Indian Institute of Science	Fall 2024

ACADEMIC SERVICE

Reviewer: ICLR (2025, 2026); Machine Learning for Health (2024, 2025).
Organizer: CyPhySS (2024).
Volunteer: IROS (2026).

LEADERSHIP

Station Manager , Carnegie Tech Radio Club (W3VC)	2025–26
Founder & Chairperson , VIT Amateur Radio Club (VARC)	2021–23
Head of Avionics and Software , Assailing Falcons	2019–23