PATEL**JAY**

Contact

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Languages

English, Hindi,
Gujarati(M.T)

Programming Languages

♥Python, C, C++,
Embedded C,
HTML, WordPress, XML,
CSS

Engineering Tools

♥Matlab, CST, AutoCAD,
HFSS, ROS/ROS2

DOCTORAL

♥Underwater Acoustic
communication, Digital
Signal Processing,
RF/Microwave system,
CMOS-MEMS, Analog
MOS Design

GRADUATE

♥RF & Microwave,
Antenna Engineering,
Digital Logic Design,
Micro-controller,
Micro-processor,
Statistical signal
Analysis, Advance Digital
Communication.

Website

patel999jay.github.io

Summary

Dynamic and innovative Electrical Engineer with a PhD from Dalhousie University, bringing extensive expertise in electrical and computer engineering with a focus on communication systems and advanced technological applications. Proficient in leading research and development projects, particularly in underwater communication networks and IoT systems security, complemented by robust experience in sophisticated simulation and modeling. Demonstrates strong leadership in managing multidisciplinary teams and delivering educational programs that integrate academic rigor with practical industry applications. Experienced in enhancing IT and network infrastructures to improve system performance and reliability. Adept at deploying cutting-edge engineering solutions, I offer a unique blend of technical depth and innovative problem-solving capabilities. Committed to advancing sustainable energy solutions and technological innovations that emphasize efficiency and environmental impact. With a passion for continuous learning and a proven track record in generating impactful research outcomes, I am eager to contribute to the success of a forward-thinking organization.

Experience

2018-current **Dalhousie University** — Faculty of Engineering & Intelligent Systems Lab
Teaching Assistant & Lead Research Engineer

- Developed a robust, secure and full-duplex multi-domain communication network for marine robots using software-defined modems & Led signal processing efforts for OFDM and CDMA techniques.
- Implemented a Common Collaborative Communication Autonomy enabling interoperable operation of various unmanned vehicles in dynamic constrained environments.
- Created a Comprehensive Communication Protocol for Band limited communication systems and real-time vehicle tracking, monitoring and mission planning.
- Collaborated on a robust messaging protocol for communication between an autonomous underwater vehicle and a network of above and below-water vehicles and operators, promoting collaboration and situational awareness.
- Enhanced underwater acoustic communications through programming of proto-buffer files, communication node upgrades, and modem interface optimizations.
- Developed C++ and Python nodes to enable efficient transmission and reception of dccl-encoded underwater acoustic messages.
- Designed a solenoid driver PCB that triggers with an Iridium satellite transceiver, and collaborated to ensure seamless integration of the solenoid driver with the satellite transceiver module
- Designed and developed a testbench that is useful to test real time communication protocol using Raspberry Pi as front-end controller and custom made receiver.
- Designed and developed a custom hydrophone to capture the real time audio signals with 192KHz sampling rate.

2018-current **Dalhousie University** — MedIT, Faculty of Medicine
Helpdesk Support Specialist - Part time

- Managed IT systems across multiple platforms, optimizing computational resources for Faculty of Medicine, enhancing system efficiency and user support.
- Provided technical support and managed service requests through diverse communication channels; played a key role in the laptop lease program and systems migration.
- Collaborated with internal teams to streamline service delivery and address technical challenges, ensuring robust support for research and academic activities.

| 2016-2017 | **Parul Institute of Technology** | Faculty of Engineering |

Assistant Professor in Dept. of Electronics and Communication Engineering

- Spearheaded the design and development of an RF and Antenna Laboratory at Parul University, while serving as an Assistant Professor in Electronics and Communication Engineering.
- Held multiple coordination roles including IEEE Student Branch Coordinator, Departmental Exam Coordinator, and Practical Exam Coordinator for both Parul Institute and Gujarat Technological University.
- Engaged in teaching, examining, and mentoring undergraduate and master's level students; played a key role in setting and grading assignments and tests, assessing student work, and actively contributed to curriculum development and departmental teaching strategies.

| 2015-2016 | **Bombardier Transportation India Pvt. Ltd** | Savli, Vadodara, India |

Methods Engineer

- Served as a Trainee Engineer in the Methods Department, focusing on lean manufacturing processes, robot operations, and process optimization for major projects including the Queensland New Generation Rolling Stock (QNGR) and Delhi Metro Rolling Stock (DMRC).
- Led change management for CARBODY in BT-Savli, enhanced manufacturing methods and procedures, and programmed a 9-axis Siemens robot for automated roof manufacturing, leveraging expertise in Kaizen, SAP, and mechanical fixture development.

Education

2018–2024	**PhD** in Electrical & Computer Engineering	Dalhousie University, Halifax, NS, Canada.
2014–2016	**M.Engg** in Electronics & Comm. Engineering	Gujarat Technological University, India.
2014–2010	**B.Engg** in Electronics & Comm. Engineering	Gujarat Technological University, India.

License

| 2018 | **Engineer-in-Training** [Registration ID:29222] | Engineers Nova Scotia |

Patent

| Mar-20 | **Low cost design of UHF Antenna for roof mounted vehicular & Heavy-duty applications** |

Government of India

- Official Journal of the Patent Office (Date:March 20, 2020)

References

Currently holding Reliability Status Clearance and valid Driver's License.

Projects

| 2023-current | **TC-QVI** |

Transport Canada & Dalhousie University

| 2020-2024 | **DCAF & CATL** |

DRDC & Dalhousie University

2021-2022	**Remote Emergency Trigger System for Uncrewed Ships in Distress** MHOPEG & Dalhousie University	
2018-2022	**CDMA-based multi-domain communication network for marine robots** Thales R&D & Dalhousie University	
2018-2019	**DND IDEaS research project** Cellula Robotics and Dalhousie University	
2015-2016	**QNGR (Queensland New Generation Rolling Stock)** Bombardier Transportation India	
2015-2016	**DMRC (Delhi Metro Rail Corporation Ltd)** Bombardier Transportation India	
2015-2016	**Antenna development for Metro Trains** Bombardier Transportation and GTU	
2013-2014	**Automatic inspection system using Image Processing** VTalent Global Pvt Ltd and GTU	

Publications

Sep-24	**Shallow Water Low-Frequency Propagation Loss Predictions and Measurements towards Acoustic Range Characterization** IEEE Oceans 2024, Halifax, Canada.
Oct-22	**Collaboration of Heterogeneous Marine Robots Toward Multidomain Sensing and Situational Awareness on Partially Submerged Targets** IEEE Journal of Oceanic Engineering, Oct 2022.
Sep-21	**Kalman Filter-based doppler tracking and channel estimation for AUV implementation** IEEE Oceans 2021, San Diego – Porto, USA.
Jun-21	**Multi-UUV Object Detection Localization and Tracking with Secure Full-Duplex Communication Networks** Proceedings of Meetings on Acoustics, UACE 2021.
Dec-20	**CDMA-Based Multi-Domain Communications Network for Marine Robots** Acoustics Virtually Everywhere 179th Meeting of the Acoustical Society of America (ASA 2020).
Sep-20	**Underwater channel characterization for shallow water multi-domain communications** International Conference on Underwater Acoustics-ICUA'20.
Aug-20	**Live RF Image Transmission Using OFDM with RPi and PlutoSDR** IEEE Canadian Conference on Electrical and Computer Engineering-CCECE'20.
Oct-19	**CDMA-based multi-domain communication network for marine robots** 14th ACM International Conference on Underwater Networks Systems-WUWNET'19.
Jun-19	**Collaboration of multi-domain marine robots towards above and below-water characterization of floating targets** IEEE International Symposium on Robotic and Sensors Environments ROSE-19.
	• Best Student Paper Award at ROSE-2019.
Jul-16	**Book on Roof Mounted UHF Antenna for Auto motives** LAP LAMBERT Academic Publishing
Apr-16	**Development of Low Profile antenna for Point-to-Train Communication** 7th National Level Conference on Emerging Vistas of Technology (NCEVT-2016),Parul University
Mar-16	**Design and Simulation of Roof mounted low profile UHF antenna for Auto motives** IEEE International Conference on Wireless Communications, Signal Processing and Networking
Jan-16	**Review Paper on Design and Simulation of UHF antenna for Roof mounted vehicular and Heavy Duty Applications** Indian Journal of Technical Education

Achievements

2024 **MTS EMERGE Program 2024 Recipient** Marine Technology Society (MTS)

- Received funding to attend IEEE OCEANS 2024 Halifax.

2021-2022 **Bruce & Dorothy Rosetti Engineering Research Scholarship Grant Recipient** Faculty of Engineering, Dalhousie University

- Received funding for Doctoral research.

2018-2021 **NSERG & Thales R&D Grant Recipient** Intelligent System Lab, Dalhousie University

- Received funding for Doctaral thesis.

2020-2020 **IEEE Student Innovation Challenge Canada 2020 Recipient** IEEE Canada 2020

- Received first spot on the National IEEE Student Technological Innovation Challenge (STIC 2020).

2018-2019 **Director of Engineering, Architecture and Planning** DAGS

- Elected as Director Engineering, Architecture and Planning of Dalhousie Association of Graduate Students and International student Life Committee Member-Dalhousie University for term 2018-2019.

2018-2019 **IEEE Student branch, PES & HKN chapter Ex-Chair** IEEE Dalhousie University Student Branch

- Received funding for the project under PES Member-Driven Initiative Program from IEEE.
- IEEE HKN Member and Ex-Chair of IEEE Dalhousie University SB.
- Active Volunteer in IEEE Atlantic Canada Section.

2014-2017 **IEEE Student branch and PES chapter Chair** IEEE PU Student Branch

- Member of Technical Advisory Committee in IEEE 2018 International Conference On Power,Energy,Control and Transmission Systems.
- IEEE PU PES Student branch stood at 28 Highest Performing SB PES chapter all over the world and received token of appreciation from IEEE PES.
- Received funding from IEEE for the project under PES Member-Driven Initiative Program.
- Volunteered for 4 years in IEEE Gujarat PES Student Section.