PRADYUMNA HEGADE

LinkedIn | hegadepradyumna@gmail.com | +35799933013 | Portfolio

Tech enthusiast with an insatiable curiosity for all things telecommunications. From research to product design and implementation, I've spent over three years decoding signals, optimizing networks, and making things work (sometimes on the first try!).
Always ready to tackle the next big challenge.

SKILLS

- **Technical:**
  - Experience of Programming in C/C++ and MATLAB.
  - Git, Gerrit, GDB, Jira, Agile Methodologies, Scrum, Linux Environment.
- **Languages Known:** English | Greek | Japanese | German | Hindi | Kannada

RELEVANT EXPIERENCE

ASOCS – *A leading provider of virtualized 5G solutions for private networks.*
R&D Engineer — **Limassol, Cyprus. April 2023 – Present**
Bangalore, India. Feb 2022 – March 2023

- Project **Hermes** – Generative Physical AI Positioning Services
  - Developed a custom SRS Management System for 512 Over the Air UEs, adaptable to various TDD formats.
  - Created tailored data path protocols leveraging SCTP and UDP, built custom encoding and decoding to ensure robust communication.
  - Implemented encoding and decoding for F1AP and NRPPA procedures, ensuring compliance with 3GPP standards.
  - Designed and implemented a LMF extension to retrieve actionable coordinates for UEs.
- Project **Cyrus** – Industrial private 5G Network
  - Enhanced gNB multi-bandwidth support & SSB separation, ensuring 3GPP compliance.
  - Optimized URLLC and eMBB UE performance by refining resource block allocation, restoring efficiency and reliability.
  - Lead the end-to-end implementation and verification for gNB Fault Management system, integrating multiple KPIs and alarms.
  - Contributed to the development of Multi-DU and Multi-Cell features at L2.
  - Involved in the 'Re-establishment' & Hand Over (Intra/Inter) verification and implementation.
  - Comprehensive knowledge and understanding of end-to-end 5G Architecture.
- Technical Proficiency
  - Proficient in industry-standard tools: Attenuators, Channel Emulators, QXDM, Wireshark.
  - Defined & implemented unit/component tests, participated in code reviews in an Agile environment.

IIIT Bangalore – *premier research institute specializing in wireless technologies.*
Research Scholar — **Bangalore, India. August 2019 – Feb 2022**

- Proposed and validated a rate-optimal relay selection method for Underlay Spectrum Sharing Networks.
- Developed schemes for physical layer security and optimal antenna selection for MIMO systems, implementing them in MATLAB using Monte Carlo simulations.
- Conducted performance analyses of beamforming techniques and derived mathematical validations for proposed systems.

INTERNSHIPS

Dominica Seeds **Hyderabad, India. Dec 2018 – Jan 2019**

- Introduced a wireless system for monitoring of seed conditions at a storage facility.
- Validated the system for various pre-determined scenarios involving the optimal oxygen and temperature levels for breaking dormancy and securing optimal seed quality.

Asianet News Networks **Bangalore, India. June 2017 – July 2017**

- Enhanced communication systems within Outside Broadcast (OB) Vans by customizing intercom systems for efficient coordination.

RESEARCH CONTRIBUTIONS AND PATENTS

- **Surveillance System for Dead Zone in International Conference on Comm. and Electronics Syst.** (**Patent No**: 505566)
  - Identified a critical need for real-time threat detection in remote locations lacking traditional network coverage.
  - Designed a scalable solution using robots equipped with threat identification and LoRa communication for data transmission.
- **Secrecy Performance with Optimal Relay & Antenna Selection in Spectrum-Sharing Networks – DOI**: https://ieeexplore.ieee.org/document/9840825
  - Investigated and proposed a new scheme for improving physical layer security of underlay wiretap spectrum sharing networks.
- **Secrecy-Aware Relay and Antenna Selection for MIMO Wiretap Spectrum-Sharing Network – DOI**: https://ieeexplore.ieee.org/document/9860746
  - Proposed a scheme for improving the secrecy performance of relay assisted Multiple Input Multiple Output network in the presence of an eavesdropper.
- **Self-Balancing Bot Using PID controller**
  - Developed a small project initiative for understanding the concept and applications of Self-Balancing Bot.

EDUCATION | PROFESSIONAL DEVELOPMENT

University of Virginia: Digital Product Management Specialization *(Online)*

Covered key aspects of digital product management, including product strategy, user experience design, agile methodologies, data analytics, and product marketing.

IIIT Bangalore: MS by Research in **Networking and Communication** **2022**

Thesis formulated around the physical layer security of a MIMO underlay spectrum sharing network.

SRM Institute of Science and Technology: B. Tech in **Electronics and Communication** **2019**

Relevant Coursework: Wireless, Digital and Computer Communication, Communication systems.

COMPETITIONS

- **IET Project Expo**
  Won the 2nd prize, for a project exhibition open to students and professionals organized by IET
- **Elekthon 2k17**
  Secured 1st rank in the competition organized by MHRD and Aakash Research Labs
- **Co-Curricular activities**
  - Organized a National Techno-management fest in Undergraduate.
  - Part of Various Student forums (IEEE, IETE, IEI)
  - Coordinated with NGOs in the past
  - State Level Table Tennis player