



AMIT SRAVAN BORA

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EDUCATION

Doctor of Philosophy <i>Wireless Communications</i> Monash University	Feb. 2021 – Aug 2024 Clayton, Australia
Master of Science <i>Semiconductor Technology</i> 4.25/4.3 GPA National Chiao Tung University	Sept. 2018 – Aug 2020 Hsinchu, Taiwan
Bachelor of Engineering <i>Electronics & Telecomm.</i> 77.47% (Hons.) Assam Engineering College (Gauhati University)	Aug. 2013 – Aug 2017 Guwahati, Assam, India

WORK EXPERIENCE

Assistant Professor IIT Kharagpur	May 2026 – Present Kharagpur, India
Working as an assistant professor in the GS Sanyal School of Telecommunications since 11.05.2026.	
Research Associate Vodafone Chair for Mobile Communications Systems, TU Dresden	Nov. 2024 – Apr. 2026 Dresden, Germany
Worked under Prof. Gerhard Fettweis and Dr. Emil Matus on the project titled “Hardware-Efficient MIMO Beamforming and Detection Algorithms for 6G,” focusing on developing algorithms to optimize MIMO detection for 6G networks, with a strong emphasis on hardware efficiency.	
Teaching Associate Monash University	Mar. 2022 – Jun. 2024 Clayton, Australia
Courses and Instructors: ECE5883 Adv. Signal Processing (Prof. Emanuele Viterbo), ECE4042 Comm. Theory (A/Prof. Yi Hong), ECE5884 Wireless Comm. (Prof. Emanuele Viterbo), ECE2111 Signals and Systems (Prof. Scott Tyo), ECE3141 Information & Networks (Dr. Mike Biggar). - Assisted in both MATLAB and SDR-based labs; led tutorial sessions.	
Teaching Assistant National Chiao Tung University	Mar. 2020 – May 2020 Hsinchu, Taiwan
Course and Instructor: CST5225 Memory Circuits and Systems (A/Prof. Po - Tsang Huang). - Assisted in labs based on HSPICE.	

RESEARCH INTERESTS

My research focuses on hardware-efficient MIMO detection and delay-Doppler communication systems. I am also broadly interested in wireless communications, communications theory, and VLSI architectures for signal processing and communication systems, with an emphasis on hardware-software co-design.

RESEARCH EXPERIENCES

Hardware-Efficient MIMO Detection for 6G <i>Postdoc</i> Monash University Supervisors: Prof. Gerhard Fettweis and Dr. Emil Matus	Nov. 2024 – Present
My current work focuses on optimizing the Box Decoder, a tree-based MIMO detection algorithm proposed by researchers at the Vodafone Chair, which avoids QAM-dependent sorting operations. While effective for small MIMO configurations, its complexity scales exponentially with the number of antennas. I am currently investigating techniques that reduce the complexity for higher orders of MIMO without significant degradation in its performance, and evaluating its performance under realistic spatial correlation models.	

OTFS for High Mobility Wireless Communications | PhD Thesis

Feb. 2021 – Aug. 2024

Monash University | Supervisors: A/Prof. Yi Hong and Dr. Khoa T. Phan (La Trobe Uni)

- A significant part of my research addresses the challenges of adapting OTFS modulation for multiple-input multiple-output (MIMO) systems, particularly in mitigating the transmit and receive spatial correlations that adversely affect the system performance. Additionally, my research extends to the integration of IRS/RIS with OTFS systems, studying the diversity performance of OTFS in block time-varying channels, and investigating the error performance in OTFS-modulated cell-free systems.

All-Digital Wideband FH-OFDM Using RF Sampling ADCs | Masters Thesis

Aug. 2019 – Aug. 2020

National Chiao Tung University | Supervisor: A/Prof. Po - Tsang Huang

- Designed a wideband frequency-hopped OFDM system using all-digital components such as DUCs, DDCs, RF Sampling ADCs and DACs. Real-time spectra of the frequency-hopped signals were observed using the experimental setup featuring the Xilinx ZCU111 RFSoc and Qorvo RF front end.

FPGA Implementation of LPC-based Speaker Verification | Undergrad Thesis

Aug. 2016 – July. 2017

Assam Engg. College, IIT Guwahati | Supervisors: Dr. Navajit Saikia and Dr. Gaurav Trivedi

- Implemented a basic speaker verification system on an FPGA, utilizing linear predictive coding coefficients derived through the Levinson-Durbin algorithm for speaker feature extraction.

Verilog Simulation of an 8-bit UART. | Undergrad Summer Internship

Jul. 2016 – Aug. 2016

IIT Roorkee | Supervisor: Prof. Anand Bulusu

- Tasked with simulating the 8-bit UART block of the LEON3 processor using Verilog. Concurrently extracted the layout design of a two-stage inverter and an oscillator in 45 nm technology using the Cadence Virtuoso tool.

PUBLICATIONS

- S. Yang, **A. S. Bora**, E. Matus, G. Fettweis, "Deterministic Sort-Free Candidate Pruning for Scalable MIMO Box Decoding", *accepted in EUSiPCO 2026*, May 2026, <https://arxiv.org/abs/2512.00653>.
- **A. S. Bora**, S. Yang, E. Matus, G. Fettweis, "Box Decoding with Probabilistic Tree Pruning for Scalable Sort-Free MIMO Detection", in *IEEE Wireless Communication Letters*, Jan. 2026, doi: 10.1109/LWC.2026.3658890.
- **A. S. Bora**, K. T. Phan and Y. Hong, "Downlink Error Performance Analysis of an SCMA Aided Cell-Free System with OTFS Modulation," in *IEEE Transactions on Vehicular Technology*, doi: 10.1109/TVT.2025.3575211 .
- **A. S. Bora**, K. T. Phan and Y. Hong, "Diversity Analysis of OTFS over Block Time-Varying Channels," in *IEEE Transactions on Vehicular Technology*, vol. 73, no. 9, pp. 14062-14067, Sep. 2024, doi: 10.1109/TVT.2024.3396490.
- **A. S. Bora**, K. T. Phan and Y. Hong, "Mitigating Spatial Correlation in MIMO-OTFS," in *IEEE Transactions on Vehicular Technology*, vol. 73, no. 3, pp. 3608-3622, March 2024, doi: 10.1109/TVT.2023.3324925.
- **A. S. Bora**, K. T. Phan and Y. Hong, "IRS-Assisted High Mobility Communications Using OTFS Modulation," in *IEEE Wireless Communications Letters*, vol. 12, no. 2, pp. 376-380, Feb. 2023, doi: 10.1109/LWC.2022.3227395.
- **A. S. Bora**, K. T. Phan and Y. Hong, "Spatially Correlated MIMO-OTFS for LEO Satellite Communication Systems," 2022 IEEE International Conference on Communications Workshops (ICC Workshops), Seoul, Korea, Republic of, 2022, pp. 723-728, doi: 10.1109/ICCWorkshops53468.2022.9814666.
- **A. S. Bora**, T. H. Singh and P. T. Huang, "Digi-FH-OFDM: An All-Digital Wideband Frequency-Hopped OFDM System." *Physical Communication* 52 (2022): 101660, [10.1016/j.phycom.2022.101660](https://doi.org/10.1016/j.phycom.2022.101660).
- **A. S. Bora**, T. H. Singh and P. -T. Huang, "An All-Digital Wideband OFDM-based Frequency-hopping System using RF Sampling Data Converters," 2021 National Conference on Communications (NCC), Kanpur, India, 2021, pp. 1-5, doi: 10.1109/NCC52529.2021.9530022.
- **A. S. Bora** et al., "Power Efficient Speaker Verification Using Linear Predictive Coding on FPGA," 2018 International CET Conference on Control, Communication, and Computing (IC4), Thiruvananthapuram, India, 2018, pp. 260-265, doi: 10.1109/CETIC4.2018.8530925.

ACADEMIC AWARDS

Postgraduate Publication Award Received an allowance for 8 weeks to publish part of thesis work while awaiting thesis examination.	Aug. 2024
Monash Research Scholarship Recipient of a monthly stipend, funded through grants from the Australian Research Council (ARC).	Feb. 2021
Monash Faculty of Engineering International Postgraduate Research Scholarship Granted a full tuition waiver and health insurance coverage for the duration of my PhD program.	Feb. 2021
Taiwan Ministry of Education (MoE) Scholarship Granted a full tuition waiver and a monthly stipend for the duration of my Masters program.	Aug. 2018

TECHNICAL PROFICIENCY

Programming	: C, C++, Verilog, VHDL, HSPICE.
Software Tools	: MATLAB, Simulink, NI Labview, Vivado, Xilinx ISE.
Hardware boards	: Xilinx ZCU111 RFSoc, NI USRP, Xilinx Zynq ZC706.

ACADEMIC SERVICE

- Peer reviewer for the following Journals:
 - IEEE Transactions on Wireless Communications
 - IEEE Transactions on Communications
 - IEEE Journal on Selected Areas of Communications
 - IEEE Transactions on Vehicular Technology
 - IEEE Wireless Communications Letters
 - IEEE Communications Letters
 - IEEE Transactions on Green Communications and Networking
- Peer reviewer for the following conferences:
 - IEEE/CIC International Conference on Communications in China 2022
 - IEEE International Conference on Communications 2022 - 2025
 - EuCNC & 6G Summit 2025

ACADEMIC REFEREES

Prof. Yi Hong – Associate Professor

Dept. of Electrical and Computer Systems Engineering,
Monash University, Clayton, Australia.
yi.hong@monash.edu

Prof. Emanuele Viterbo – Professor

Dept. of Electrical and Computer Systems Engineering,
Monash University, Clayton, Australia.
emanuele.viterbo@monash.edu

Prof. Gerhard Fettweis – Vodafone Chair Professor

Vodafone Chair for Mobile Communications Systems,
Technische Universität Dresden, Germany.
gerhard.fettweis@tu-dresden.de