

Aakash Bansal (Ph.D. Researcher)

Wolfson School of Mechanical, Electrical and Manufacturing Engineering
Loughborough University, United Kingdom

Date of Birth: 12 October 1995

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Last Updated on 3 March 2021

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1 EDUCATION

- ❖ Doctor of Philosophy (Ph.D.) (2019 – Present)
Wolfson School of Mechanical, Electrical and Manufacturing Engineering
Loughborough University, UK
Supervisors: Dr. Chinthana Panagamuwa, Prof. Will Whittow
Dissertation Title: Design and Development of Active Beamforming mmWave Antenna System for 5G Base Stations
- ❖ Bachelor of Technology (B.Tech.) (2013 – 2017)
Guru Gobind Singh Indraprastha University, New Delhi (India)
Major: Electronics and Communication Engineering
Percentage Obtained: 78.27%
Ranked in top 15 out of 200 students in the batch
- ❖ All India Senior School Certificate Examination (Class 12 – Equivalent to A Levels) (2012 – 2013)
Vivekanand International School, New Delhi (Central Board of Secondary Education)
Subjects: Physics, Chemistry, Mathematics, English, Computer Science
Percentage Obtained: 84.4%
- ❖ All India Secondary School Examination (Class 10 – Equivalent to GCSE) (2010 – 2011)
Vivekanand International School, New Delhi (Central Board of Secondary Education)
Subjects: Mathematics, Science, Social Science, English, Computer Science, Hindi
Percentage Obtained: 8.8/10

2 SKILLS

- ❖ Operating System – Windows, Linux.
- ❖ Programming Languages – C, C++, Python, HTML, CSS.
- ❖ Proficient with electromagnetic simulations and antenna designing with EM modelling softwares such as CST Microwave Studio, Ansys HFSS, Empire XPU, Keysight Advanced Design Suite (ADS); scripting in MATLAB, python and MS Excel for automation and data analysis; 3D printing with general CAD tools; and manufacturing PCB based antenna designs.
- ❖ Experienced with operating network analysers, anechoic chamber, 3D-printers, microcontroller/microprocessor boards including Arduino, AVR Microcontrollers, Raspberry Pi and NodeMCU.
- ❖ Research Interests: Microstrip Antenna, Phased Array Antenna, Millimeter Wave Communication, 5G Communication, Beamforming Techniques, Dielectric Lenses, Metamaterials.

3 WORK EXPERIENCE

- ❖ Engineering Research Associate (Part Time) (2019 – Present)
Wolfson School of Mechanical, Electrical and Manufacturing Engineering
Loughborough University, UK
Supervisors: Prof. Will Whittow, Dr. Sheryl Williams
Collaborating on several projects focused on antenna designing, measurement, testing and data analysis. Built open-source kits with the aim to introduce engineering among school students.

- ❖ Academic Support Mentor (Part Time) (2021 – Present)
Loughborough University, UK
Supporting Loughborough University's School and Liaison Team's outreach initiatives with curating content and delivery of academic projects to school students of age 14-18. Curating a short course on Introduction to Wireless Communication for high school students as a part of university's outreach program to promote science and engineering programs.
- ❖ Head of Innovation and Student Outreach (Voluntary Position) (2019 – Present)
National Indian Students and Alumni Union UK (NISAU)
Manager: Sanam Arora (Chairperson)
Leading a team of 12 volunteers spread all over the UK, providing end-to-end query and grievance redressal for students, and volunteer recruitment promoted to Head of Innovation within a year of being at the organization, having led several projects to enable the organization to leverage technology, becoming more agile and efficient in the way it delivers outcomes.
- ❖ Innovation Coach and Consultant (2018 – 2019)
Connecting Dreams Foundation, New Delhi (India)
Responsible for consulting and training of students and faculty under Atal Tinkering Labs on design innovation, introduction to electronics and programming established among 2400 schools throughout India.
- ❖ Research Associate – CSIR Central Electronics Engineering Research Institute, Pilani (India) (2017 – 2019)
Supervisors: Dr. Vishnu Srivastava, Dr. R K Sharma
Project Title: Design and Development of Planar RF Slow-wave Structure for Vacuum Microfabricated Traveling Wave Tubes
Project Summary: The project focused on developing a computationally efficient, integrated and dynamic model for the design of Staggered Double Vane Slow Wave Structure (SDVSWs) and beam-wave interaction analysis of a planar Traveling Wave Tubes (TWT) with a sheet electron beam to determine its RF performance. The model was further used to design and simulate a 0.22THz Sheet Beam TWT of 100W output power. A 3D model for a 0.22THz Planar Traveling Wave Tubes for fabrication has been made using the specifications generated from the analytical model and was tested using Ansys HFSS.
- ❖ Student Intern (Short Periods between 2015 and 2017)
Interned with Ministry of Electronics and IT, Govt. of India and Bharti Airtel Network Experience Centre working on 3G/4G network architecture and location tracking with mobile signal density.

4 ACHIEVEMENTS

- ❖ Recipient of Sir Robert Martin University Prize 2020 (Loughborough University's most prestigious award)
- ❖ One of the three finalists for Loughborough University's PhD Award for Overall Impact 2020.
- ❖ Recipient of Action Volunteer Bronze Award 2020 by Loughborough Students' Union for STEM Promotion Activities.
- ❖ Recipient of Electronics Weekly BrightSparks 2020 Award for research and STEM Promotion in the UK.
- ❖ Recipient of Young Engineer Award 2019 by CSIR-CEERI, Pilani.
- ❖ Exemplary Performance Award for Student Training and Research 2017 by MSIT for contributions to the institution.
- ❖ Recipient of IEEE Computer Society Richard E. Merwin Student Scholarship 2016 for academic performance.
- ❖ Recipient of MIT GSW Fellowship 2016 for the proposed idea of self-sustained LED Bulbs.
- ❖ Received Project Funding for Design of Self Sustained LED Bulbs from Sristi – An IIM-A based NGO.
- ❖ Won IEEE MTT-S YouTube/Youku Video Contest for Offline GPS.
- ❖ Recipient of the IEEE Delhi SAC Outstanding Student Volunteer Award 2016 for volunteering with IEEE.
- ❖ Winner for multiple Hardware Hackathons organized by TATA Power, DTU, NSIT, IIIT, etc.
- ❖ Winner for various Paper Presentation Competitions organized by MSIT, JMI, etc.

5 PUBLICATIONS

❖ Under Review/Submitting:

- *Millimeter-Wave Wideband SIW Bow-Tie Slot Arrays Antenna with Frequency-Controlled Beam-Steering Operation for 5G Base Stations*, Submitted to IEEE Transactions on Antenna & Propagation.
- *Modified Dielectric Lenses for Travelling Wave Antenna Array*, Submitted to IEEE Transactions on Antenna & Propagation.

❖ Published Works:

- A. Bansal, V. Srivastava, R. Gupta, R. K. Sharma, "Novel Microfabricated Slow Wave Structure for a 0.22-THz Sheet Beam Travelling Wave Tube," IEEE Transactions on Electron Devices (Accepted for Publication).
- A. Bansal, C. J. Panagamuwa, W. G. Whittow "Active mmWave Beam-Steering Antenna for 5G and Future IoT Applications," 32nd Simulia EuroNorth Regional User Meeting, October 2019.
- R. Gupta, G. Bakshi, and Aakash Bansal, "Dual-Band Circularly Polarized Stacked Sapphire and TMM13i Rectangular DRA," Progression in Electromagnetics Research, Vol. 91, 143-153, 2019.
- A. Bansal, V. Srivastava, and R. Gupta, "Integrated Model for Design of SWS and Beam-Wave Interaction Analysis of a Planar THz Sheet-Beam TWT," Progress in Electromagnetics Research, Vol. 87, 179-187, 2019.
- A. Bansal, "Design and Implementation of a Long-Range Decentralized Vehicular Network." Journal of Mechatronics and Automation 5.1 (2018): 24-30, 2018.
- A. Bansal, et al. "Any Touch: Design and Implementation of a Touch Interface for Bluetooth Enabled Personal Devices." International Journal of Engineering and Manufacturing 8.2, 2018.
- A. Bansal, R. Gupta, "A review on microstrip patch antenna and feeding techniques." International Journal of Information Technology, 1-6, 2018.
- A. Bansal, et al. "Analysis and Design of Coaxial Fed Microstrip Antenna on Multilayer substrate at Terahertz Frequency," Journal of Microwave Engineering and Technologies 4.3, 11-14, 2018.
- A. Bansal, V. Goyal, "Real-Time Electricity Monitoring using Smart Energy Meter in a Smart LAN based Network." International Journal of Electronics, Electrical and Computational System, 2017.
- N. Rathee, A. Bansal, A. Gupta, S. Singh, R. Devasia, "Digital resistance box: An approach to generate the desired value of resistance by automatically varying the potentiometer." IEEE International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES) 2016, New Delhi.
- (Poster) A. Bansal, S. Jain, "Offline GPS: Location Tracking with Mobile Signal Density", International Conference on Intelligent Communication, Control and Devices 2016, Dehradun.
- (Poster) A. Bansal, S. Jain, "Centralized Traffic Monitoring using Mobile Signal Density", International Symposium on Fusion of Science and Technology 2016, New Delhi.

6 ADDITIONAL INFORMATION

❖ Position of Responsibility

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| ○ STEM Ambassador, Loughborough University (UK) | [2019 – Present] |
| ○ Midlands Representative, IEEE UK & Ireland YP Affinity Group | [2019 – Present] |
| ○ Sub Zonal Coordinator, IEEE Region 10 Student Activity Committee | [2017 – 2018] |
| ○ Industrial Representative, IEEE India SCT | [2017 – 2018] |
| ○ Mentor, IEEE Delhi Section Student Network | [2017 – 2018] |
| ○ Chairperson, IEEE MSIT Student Branch | [2016 – 2017] |
| ○ Technical Activities Coordinator, IEEE Delhi Section | [2016 – 2017] |

❖ Hobbies and Interests

- Volunteering, Writing, Swimming, Binge Watching (Sci-Fi/Comedy).