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Aakash Bansal

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

Date of Birth: 12 October 1995
Nationality: Indian

(+44) 758 663 0878
(+91) 870 062 5045
a.bansal@lboro.ac.uk
www.bansalab.me
www.linkedin.com/in/bansalaakash

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. William Whittow
  Worked on consultancy projects with supervisors
  Served as a Lab Assistant for various PG coursework
  STEM Promoter and recipient of Electronics Weekly Bright Sparks 2020
  Recipient of Sir Robert Martin University Prize 2020

- 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
  Recipient of IEEE Richard E. Merwin Student Scholarship 2016
  Exemplary Performance Award for Research and Training

- 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 RESEARCH EXPERIENCE

- Ph.D. Dissertation - Loughborough University (UK) (2019 – Present)
  Title: Active Millimeter-Wave Beam-Steering Antenna Array for 5G and Future IoT Devices
  Supervisors: Dr. Chinthana Panagamuwa, Prof. William Whittow
  Summary: This research aims to meet the increasing demand for faster data-rates and reliable connectivity for everyone everywhere, and to support new technologies such as the Internet of Things, millimeter-waves have been identified as a suitable spectrum for developing fifth-generation technology. New types of antennas are needed that can dynamically focus the radiation in specific directions to minimize losses and interference.
  Traditionally, complex phase shifters feeding antenna arrays are used to beamform radiation patterns in different directions. These can be cumbersome and are not ideal for small installations. This research is looking into developing cheaper and more compact active antenna array systems for electronic beam-steering at 28GHz for applications in 5G base stations.

- Research Associate – CSIR Central Electronics Engineering Research Institute, Pilani (India) (2017 – 2019)
  Title: Design and Development of Planar RF Slow-wave Structure for Vacuum Microfabricated Traveling Wave Tubes

Supervisors: Dr. Vishnu Srivastava, Dr. R K Sharma
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. Staggered Double Vane-Slow Wave Structure (SDV-SWS) is used for its numerous advantages over other types of SWSs. The designed integrated model determines RF performance of a planar TWT directly from the given beam voltage and centre frequency by performing three different tasks, (i) determining geometrical parameters of an SDV-SWS of maximum possible bandwidth and high interaction impedance, (ii) determining RF circuit parameters of an SDV-SWS, and (iii) performing beam-wave interaction analysis of a planar TWT. The model was developed by adopting a numerical computing environment, MATLAB. Also, highly accurate numerical techniques with double precision such as the Sixth Order Runge Kutta Method was used for electron beam dynamic. 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.

3 Work And Volunteer Experience

- Head of Innovation and Student Outreach (2019 – Present)
  National Indian Students and Alumni Union UK (NISAU)
  Manager: Sanam Arora (Chairperson)
  Responsible for all outreach activities for all Indian Students in the UK, this includes mentoring a team of 10 volunteers spread all over the UK, providing end-to-end query and grievance redressal for students, promoted to Head of Innovation within a year 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. Lately, I have also been involved in volunteer recruitment.

- International Student Ambassador (2019 – Present)
  International Office, Loughborough University (UK)
  Assisting International Office at the university with student recruitment for post-graduate courses through calling campaigns, webchats and fairs, handling different groups on social media to resolve general admission queries and sharing latest updates from the university with prospective students.

- Engineering Research Assistant (2019 – 2020)
  Wolfson School of Mechanical, Electrical and Manufacturing Engineering
  Loughborough University, UK
  Supervisor: Dr. Sheryl Williams, Prof. Will Whittow
  Undertaking consultancy projects for antenna designing and measurement, design open-source robotic kits for kids to introduce basic logic-building and programming skills through scratch, handled STEM showcase and promoting STEM Education in and around Loughborough through workshops and supporting coding clubs in schools.

- 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.

4 SKILLS

- Languages Known: English, Hindi (mother tongue)
- Technical Skills:
  - Operating System – Windows, Linux.
  - Programming Languages – C, C++, Python, HTML.
  - Software – CST Microwave Studio, Ansys HFSS, Empire XPU, Keysight Advanced Design Suite (ADS), MATLAB & Simulink, Comsol Multiphysics, Microsoft Office, Adobe Photoshop, Adobe Illustrator.
  - Hardware – Vector Network Analyser, Anechoic Chamber, 3D Printers, Microcontroller boards including Arduino, AVR Microcontrollers, Raspberry Pi, NodeMCU, TI MSP430.

5 PUBLICATIONS

- Submitted/Under Review/Submitting:
  - "Millimeter-Wave Wideband SIW Bow-Tie Slot Arrays Antenna with Frequency-Controlled Beam-Steering Operation for 5G Base Stations," IEEE Transactions on Antenna & Propagation.
  - "3D Bespoke Lens for Travelling Wave Antenna Array," IEEE Transactions on Antenna & Propagation.

- Published Works:
  - V. Srivastava, A. Bansal, "Microfabricated Planar Slow Wave Structure for a 0.22-THz TWT," IEEE Transactions on Electron Devices (Accepted for Publication)
  - R. Gupta, G. Bakshi, and Aakash Bansal, "Dual-Band Circularly Polarized Stacked Sapphire and TMM13i Rectangular DRA," Progression in Electromagnetics Research M, Vol. 91, 143-153, 2020.
  - 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 M, Vol. 87, 179-187, 2019.
  - A. Bansal, "Active mmWave Beam-Steering Antenna for 5G and Future IoT Applications," 32nd Simulia EuroNorth Regional User Meeting, October 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, "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, IJEECS, ISSN, 2017.
  - A. Bansal, et al. "Explosion Intensity Measurement using Piezo Element." 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." 2016 IEEE 1st International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES). IEEE, 2016.
  - Centralized Traffic Monitoring using Mobile Signal Density, International Symposium on Fusion of Science and Technology, New Delhi.

6 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 for STEM Promotion Activities in Loughborough.
- Recipient of Electronics Weekly BrightSparks 2020 Award for research and STEM Promotion in the UK.
- Exemplary Performance Award for Student Training and Research 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.

7 ADDITIONAL INFORMATION

- Research Interests:
  - Microstrip Antenna, Phased Array Antenna, Millimeter Wave Communication, SIW Slot Antenna, Beamforming Techniques.

- Position of Responsibility
  - 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]

- Seminars/Workshops/Sessions Delivered
  - Basics of Arduino, Government Engineering College Ajmer.
  - Concepts of Microstrip Antenna Designing, B K Birla Institute of Engg. And Tech., Pilani.
  - Applications of Image Processing, HMR Institute of Technology and Management, New Delhi.
  - Introduction to HAM Radios, IEEE MTT-S Asia Pacific Microwave Conference-IMaRC 2016, New Delhi.
  - Engineering Behind HAM Radios, Indian Red Cross, New Delhi.
  - Circuit Simulation and Assembling, National Power Training Institute, New Delhi.
  - Circuit Simulation and Assembling, Faculty of Engineering, Jamia Millia Islamia University, New Delhi.

- Hobbies and Interests
  - Travelling, Short Story Writing, Swimming.

(References are available on request)