

PROJECTS

Prof. M. Tariq Banday

Completed:

1. "Algorithm and Service Design For Indian Regional Language CAPTCHA Challenges" from DST (EMR Scheme of SERB), GOI, Rs. 28,395,00, (2017-2020).
2. "Design of low power, low resource cryptographic procedures for IoT security control." from MeitY, GoI, Rs. 45,68,600, (2017-2020).
3. "Design and Development of New E-mail Security Protocols and Forensic Tools." from UGC, GOI, Rs. 11, 27,000.00, (2012-2015).

Ongoing:

4. "Artificial Intelligence-based Predictive Irrigation Monitoring and Control System for Apple Orchards." from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 20, 00, 000, (2026-2028).
5. "A Multiversity Alliance on Health and Energy through Engineered Biomolecular Systems" from ANRF (PAIR Scheme), GOI, Rs. 2, 30, 00, 000, (2025-2027).

Dr. Farooq Ahmad Khanday

Completed:

1. "Development of Integrable, Electronically tunable Fractional-order Capacitance (Fractance) and its applications." from DST (EMR Scheme of SERB), GOI, Rs. 53, 94,928.00, (2017-2020).
2. "Development of Low Voltage Companding filters and their implementation in IC form." from UGC, GOI, Rs. 7, 30,000.00, (2010-2015).
3. "Realization of Low-Voltage Switched Current Circuits Amenable for IC Form." from UGC, GOI, Rs. 2, 00,000.00 (\$2680), (2012-2013).

Ongoing:

4. "AI Based Translation and Restoration of Rare Manuscripts." from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 8, 00, 000, (2025-2026).
5. "A Multiversity Alliance on Health and Energy through Engineered Biomolecular Systems" from ANRF (PAIR Scheme), GOI, Rs. 2, 30, 00, 000, (2025-2027).

Submitted:

6. "Device-Algorithm Co-design of Energy-Efficient Memristive Neuromorphic Chips with Quantum-Inspired Acceleration for Secure Intelligent Sensing and High-Performance Edge AI" Project submitted to International Cooperation Division Programme under the Scheme: BRICS Call for Proposals, Ministry of Science and Technology GOI for ~Rs. 4.4 Cr (2027-2029).
7. "Energy-Efficient and Scalable Neuromorphic Devices & Circuits using SNNs for Edge AI and On-Chip learning." ARG project submitted to ANRF GOI for ~Rs. 1 Cr (2027-2029).
8. "Novel Hardware Security Framework for Emerging Device based Neuromorphic AI Systems." ARG project submitted to ANRF GOI for ~Rs. 1 Cr (2027-2029).
9. "Development of a Low-Cost Handheld Bio-Impedance Device for Real-Time Point-of-Care Tissue

Malignancy Detection.” Project submitted to ICMR GOI for Rs. 80,00,000 (2027-2029).

Dr. Shabir Ahmad Parah

Completed:

1. “Design, Development and FPGA implementation of Novel Cryptographic Techniques.” from University Grants Commission (UGC), GOI, Rs. 2, 00,000 (2011-2013).
2. “Design and Development of Energy Efficient Millimeter Wave Antennas for 5G Networks and IOT.” from ICPS division DST, Govt. of India, Rs. 64,82,000 (2022-2025).
3. “Development of lightweight security algorithms for IOMT based smart-health applications.” from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 5, 79,000, (2023-2024).
4. “Early detection and efficient prevention of breast cancer using machine learning techniques.” from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 3, 39,000, (2023-2024).

Ongoing:

5. “Design and Implementation of novel hybrid watermarking algorithms for copyright protection of Cultural artifacts with special reference to IPR protection of Kashmiri Folk Songs and Heritage Imagery.” from Department of Science & Technology, GOI, Rs. 57, 00, 000, (2023-2026).
6. “Design and Development of Early Diagnosis Framework of Alzheimer’s Disease using Machine Learning” from Department of Science & Technology, GOI, Rs. 50, 00, 800, (2025-2028).
7. “A Multiversity Alliance on Health and Energy through Engineered Biomolecular Systems” from ANRF (PAIR Scheme), GOI, Rs. 2, 30, 00, 000, (2025-2027).

Dr. Javaid Ahmad Sheikh

Completed:

1. “Design, Realization and Implementation of CDMA based Multiuser and Multicarrier Wireless Communications.” from University Grants Commission (UGC), GOI, Rs. 1, 99,000 (2011-2013).
2. “Design and Development of Energy Efficient Millimeter Wave Antennas for 5G Networks and IOT.” from ICPS division DST, Govt. of India, Rs. 64,82,000 (2022-2025).
3. “Early detection and efficient prevention of breast cancer using machine learning techniques.” from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 3, 39,000, (2023-2024).

Ongoing:

4. “Design and Implementation of novel hybrid watermarking algorithms for copyright protection of Cultural artifacts with special reference to IPR protection of Kashmiri Folk Songs and Heritage Imagery.” from Department of Science & Technology, GOI, Rs. 57, 00, 000, (2023-2026).
5. “Design and Development of Three-Dimensional Flexible Antenna Array for Wearable Electromagnetic Head Imaging system for Stroke Detection..” from JK SCIENCE TECHNOLOGY & INNOVATION COUNCIL, Department of Science & Technology, J&K, GOI, Rs. 10, 00,000, (2024-2026).
6. “A Multiversity Alliance on Health and Energy through Engineered Biomolecular Systems” from

ANRF (PAIR Scheme), GOI, Rs. 2, 30, 00, 000, (2025-2027).

Submitted:

7. "Design and Development of Metamaterial Inspired Antenna Array Sensors for Non-Invasive Microwave Imaging for Breast Tumour Detection" Project submitted to ICMR GOI for ~Rs. 40L (2027-2029).
8. "Multibeam Antennas for wireless communications and Radar applications." ARG project submitted to ISRO GOI for ~Rs. 92L (2027-2029).
9. "AI Driven Reconfigurable Intelligent Surface assisted secure and adaptive battlefield communication system for next generation defense networks." ARG project submitted to ANRF GOI for ~Rs. 58 L (2027-2029).

Dr. Zamir Ahmad Wani

Ongoing:

1. "Development of Frequency-Diverse Microwave Imaging System for Dielectric Contrast Mapping." from ANRF, GOI, Rs. 60, 24, 480, (2026-2028).

Submitted:

2. "Advanced Antenna Technologies for Beyond 5G/6G Communication Systems." ARG project submitted to ANRF GOI for ~Rs. 1 Cr (2027-2029).
3. "Development of a Metal Lens Antenna for Wind Profiler Radar at K Band" Submitted to ISRO, GOI, ~Rs. 80, 00, 000, (2027-2029).

RESEARCH AND INFRASTRUCTURE AUGMENTATION SCHEMES
Visvesvaraya PhD Scheme of Ministry of Electronics and Information Technology for an amount of Rs. 100.826 Lacs (2015-2020), Rs. 76.724 Lacs (2022-2027), Rs. 145.232 Lacs (2023-2028), Rs. 72.61 Lacs (2025-2030). (Nodal Officer: Prof. M. Tariq Banday)
Special Assistance Program (SAP) of University Grants Commission for an amount of Rs 75.00 Lacs from 2013 -2018 (Coordinator: Prof. M. Tariq Banday)
FIST, Level -2 category of Department of Science and Technology for an amount of Rs. 105 Lacs (2021-2025) (Coordinator: Prof. M.Tariq Banday)
EDA (Electronic Design Automation) tools under the C2S Programme at the ChipIN Centre, (Nodal Officer: Dr. Farooq Ahmad Khanday)

PATENTS

Dr. Farooq Ahmad Khanday

Granted:

1. **FAROOQ AHMAD KHANDAY**, Shaika Hassan, Insha Showkat, Jahangir Hameed Lone, Mudasir Ahmad Khanday, Shazia Rashid, Hilal Ahmad Bhat, Javeed Iqbal Reshi and Costas Psychalinos, "Portable Microcontroller-based Impedance Meter for Biological Tissue Analysis," INDIAN Patent Office, Patent number-563600, Application number-202411038816, Publication date-25 March 2025.
2. **FAROOQ AHMAD KHANDAY**, Irfan Rashid, Owais Rashid, Jahangir Hameed Lone, and Syed Danish Rafiq Kashani, "Self-Navigating Boat for Fire Mitigation and Aquatic Ecosystem Monitoring," Intellectual Property Office, United Kingdom (UK), Application number-465896-001, Design number: 6454956, Grant date: 08 July 2025, Registration date: 02 July 2025.

Published:

3. **FAROOQ AHMAD KHANDAY**, Irfan Rashid, Owais Rashid, Jahangir Hameed Lone, and Syed Danish Rafiq Kashani, "Autonomous Multipurpose Hydro Boat", INDIAN Patent Office, Application number-465896-001, CBR No. – 215108, CBR date-16 July 2025

Dr. Shabir Ahmad Parah

Granted:

1. Shabir Ahmad Parah, Parsa Sarosh, Shezan Fayaz, Subreena Mushtaq "Adaptive Headlight Control with Lamp detection for Vehicles," INDIAN Patent Office, Patent number- 508995, Application number- 202111007280, Publication date-22 February 2021.

Dr. Javaid Ahmad Sheikh

Granted:

1. Published/ Granted a Patent in the Govt. of India patent office on "Intelligent Pillow System" having no 202311057242.
2. Granted a Patent titled "Twist Ease Clean Tank" with Application No. 403388-001.
3. Granted a patent titled "Semicircular Brain Tumour Detection Antenna" Class: 24 Medical and Laboratory equipment subclass: 01 apparatus and equipment for Doctors, Hospitals and Laboratories" Design number: 6387668, Grant date: 09 September 2024.

Published:

4. Published/ Granted a patent titled "Smart Antenna systems for improved performance in Wireless Networks" Application No.202441082444 A, publication date 01/11/2024.
5. Published/ Granted a patent titled "Electromagnetic Compatibility of Antennas in IoT systems" under application No. 202441086538 A, publication date 15/11/2024.
6. Published/ Granted a patent titled "Advanced Frequency Synthesizers for Enhanced Communication System Performance" Application No.202441096716 A, Publication date 13/12/2024.
7. Published/ Granted a Patent titled "Metamaterial based Antennas for Enhanced Signal Propagation" Application No.202541010620 A, Publication date 14/02/2025.
8. Published/ Granted a patent "Method and System for Predictive analytics using Artificial Intelligence" 202541013262 A Publication date 21/02/2025.

9. Published/ Granted Smart Integrated Hygiene system with real-time Germ Detection and Automated Cleaning Application No.202511047089 A Publication date 30/05/2025
10. Published/ Granted: Synchronization techniques for distributed Communication Systems Application No.202641004045 A, Publication Date: 30/01/2026.
11. Published/ Granted: Design and analysis of ultra-wideband antennas for future 6G communication systems “Application No.202641030046 A, Publication Date: 27/03/2026.
12. Published/ Granted: AI-based optimization algorithms for complex computational problems Date of filing of Application: 10/05/2026 (43) Publication Date: 22/05/2026, Application No.202641059387 A.