

EDUCATIONAL BACKGROUND

- 2020-2023 **PhD (Nanotechnology Engineering)**
Sapienza University of Rome, Italy
- 2017-2020 **MS (Electronics Engineering)**
Politecnico di Milano, Italy
- 2009- 2013 **BS (Electronic Engineering)**
Balochistan University of Information Technology Engineering and Management Sciences (BUIITEMS)

WORK EXPERIENCE

- Nov 2020 - Present **Doctoral Researcher**
Sapienza University of Rome, Italy
Department of Astronautical, Electrical, and Energy Engineering (DIAEE)
Research Center on Nanotechnologies Applied to Engineering
- Title:** Graphene-based wearable sensors and devices for health monitoring and electrical applications
- Activities and Responsibilities**
- Electrical characterization of graphene-based materials for sensing applications.
 - Designed and fabricated electrical and electromechanical experimental setups to validate the performance of developed sensors, together with schematic design, PCB layout, and microfabrication techniques
 - Published research findings in peer-reviewed journals, such as IEEE Sensors Letters, Sensors and Actuators, Material and Design and IEEE Transactions.
 - Collaborated with other researchers and supervised MS and Ph.D. students to implement various electrical and electronic measurement setups, including data acquisition systems, signal processing, and communication.
 - Developed new fabrication methods for large-scale production of graphene-based materials for sensing applications.
- Mar 2019 – June 2020 **Research Assistant**
Microchip Technology, Milan, Italy
- Title:** Cosmo ArduSiPM, a particle scintillator detector for Earth and Space applications
A sponsored project by Microchip Technology and National Institute for Nuclear Physics (INFN) Italy.
- Activities and Responsibilities**
- Assisted in hardware and software product development and release process.
 - Control circuit design, analysis, and troubleshooting using Spice/CAD tools.
 - Component selection, assembling, and testing of the printed circuit boards.
 - Firmware development and debugging of ARM Cortex-M MCUs.
 - Contributed to the project deliverables and supported the project documentation

and reported to the sponsor.

- Involved in the testing, validation, and documentation of the detector and provided technical support to customers and internal team members.

Jan 2015 – Jan 2017

Lecturer

Department of Electronic Engineering
Balochistan University of Information Technology Engineering and Management Sciences (BUITEMS)

Supported administration with development, planning, and evaluation to improve the effectiveness of the electronic engineering curriculum.

Activities and Responsibilities

- Delivered lectures, seminars, and tutorials.
- Designed, prepared, and developed teaching materials for assigned courses.
- Provided mentoring, advice, and support to undergraduate students in their final-year research projects.

Jan 2014 - Jan 2015

Intern Engineer

Pakistan Telecommunication Company Limited (PTCL), Pakistan.

Activities and Responsibilities

- Deployment and PAT of Multi-Services Access Gateway under OFNS.
- Multi-Protocol Label Switching Circuit deployment and end to end testing for Cooperate customers.
- Fiber cable laying on different nodes for Video Conferencing projects
- Analysis of BSC/BTS QoS Alarms

Publication

Under Review

- 2023 **B. Ali**, V. Bocci, G. Chiodi, D. Kubler, F. Iacoangeli, L. Recchia, "Cosmo ArduSiPM, a particle scintillator detector for Earth and Space applications" IEEE Transactions on Nuclear Science (2023)
- 2023 Umar Farooq, **Babar Ali**, Hossein C. Bidsorkhi, Alessandro G. D'Aloia, Maria S. Sarto, "Graphene-based Flexible Multimodal Biosensor for Cardiorespiratory Signals Acquisition" Sensors, (2023)
- 2023 Samira L. Mansuri, **Babar Ali**, Negin Faramarzi, Umar Farooq, Hossain C. Bidsorkhi, Alessandro G. D'Aloia, Alessio Tamburrano, Maria S. Sart, "Highly Responsive Double-Layered Graphene-Based Piezoresistive Pressure Sensor for Wearable Applications" IEEE Sensors Journal 2023

Published

- 2023 **Babar Ali**, Alessandro G. D'Aloia, Hossain C. Bidsorkhi, Marco Laracca, Sabrina Sarto, "Wearable graphene-based fabric electrodes for enhanced and sustained biosignal detection", Sensors and Actuators Reports (2023)
- 2023 Hossein Cheraghi Bidsorkhi, Negin Faramarzi, **Babar Ali**, Alessandro Giuseppe D'Aloia, Alessio Tamburrano, Maria Sabrina Sarto, "Wearable Graphene-based Smart Face Mask for Real-Time Human Respiration Monitoring", Materials & Design (2023)
- 2023 V. Bocci, **B. Ali**, D. Badonib, M. Casolinob, G. Chiodia, F. Iacoangelia, D. Kubler, L. Marcellib, L. Recchiaa, M. Salvatob, "ArduSiPM technology: compact and light All-in-One detectors for space application", Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment (2023)

- 2023 **Ali, Babar**, Negin Faramarzi, Umar Farooq, Hossein C. Bidsorkhi, Alessandro G. D'Aloia, Alessio Tamburrano, Maria S. Sarto. "Graphene-based Smart Insole Sensor for Pedobarometry and Gait Analysis." *IEEE Sensors Letters* (2023).
- 2023 Faramarzi, Negin, **Babar Ali**, Hossein Cheraghi Bidsorkhi, Alessandro Giuseppe D'Aloia, Alessio Tamburrano, Maria Sabrina Sarto, "Graphene-based Smart Insole for Gait Monitoring." In 2023 IEEE International Symposium on Medical Measurements and Applications (MeMeA), IEEE, 2023.
- 2023 Farooq, Umar, **Ali, Babar**, Hossein C. Bidsorkhi, Alessandro G. D'Aloia, Maria S. Sarto. "Development of Graphene-based Flexible Thermocouples for Wearable Applications" In 2023 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS), IEEE, 2023.
- 2022 **B. Ali**, D. Badoni, V. Bocci, M. Casolino, G. Chiodi, F. Iacoangeli, D. Kubler, L. Marcelli, R. Luigi, M. Salvato. "ArduSiPM Technology: a Compact and Light All-in-One Detector for Space Applications." In IEEE Nuclear Science Symposium & Medical Imaging Conference, 2022
- 2022 **Ali, Babar**, Hossein C. Bidsorkhi, Alessandro G. D'Aloia, Marco Laracca, and Maria S. Sarto. "Graphene-based flexible dry electrodes for biosignal detection." In 2022 IEEE International Conference on Flexible and Printable Sensors and Systems (FLEPS), pp. 1-4. IEEE, 2022.
- 2021 Khan, M. S., F. K. Kakar, M. Saeed, A. Khan, **B. Ali**, M. Ashraf, S. Khan, and A. W. Tareen. "Economic analysis of DC power sources used in impressed current cathodic protection of underground pipelines." *Indian Journal of Science and Technology* 14, no. 10 (2021): 897-904.
- 2020 Haider, Muhammad Luqman, Anayat Ullah, **Babar Ali**, and Haider Ali. "Optimization of stress induced bending in mems based suspensions." *Optik* 203 (2020): 164048.
- 2018 Haider, Muhammad Luqman, Anayat Ullah, and **Babar Ali**. "Stress Optimization for a MEMS Multilayer Fixed-Fixed Beam." *Optik* 157 (2018): 988-992.

TRAININGS AND WORKSHOPS

- Jan 15 - Feb 10, 2015 **Faculty Training Program**
Organized by BUIITEMS Quetta Pakistan.
- June 10 - June 12, 2015 **Dynamics of Supervisor and Supervisee Relationship**
Organized by the Higher Education Commission (HEC) & BUIITEMS Quetta Pakistan.
- Nov 19 - Nov 20, 2015 **Data Analysis Techniques using SPSS and STATA**
Organized by International Maize and Wheat Improvement Center & BUIITEMS Quetta Pakistan
- Sep 15 - Sep 16, 2015 **Let's Sketch with Arduino**
Self-organised workshop for undergrad students of Electronics and Computer Engineering at BUIITEMS, to provide hands-on experience on Arduino platform.
- Aug 10 - Sep 24, 2010 **Web Designing and Animation**
TUSDEC, NIDA, Quetta Pakistan

PERSONAL SKILLS

Communication skills	Known for an interactive teaching style that encourages student participation and enthusiasm while facilitating learning. IELTS: 7.0
Organisational / managerial skills	A highly organized and friendly professional, able to establish long-term, positive and fun relationships with students, co-workers and outside resources.
Software	Altium Designer KiCAD Matlab/Simulink COMSOL Multi-Physics NI-LabView Cadence Proteus Autodesk Fusion 360 Autodesk Inventor Atmel Studio STMCubeIDE Arduino IDE Adobe Creative Studio
Hardware	ARM Cortex-MCUs Arduino Family MCUs Single Board Computers (SBCs) Impedance Analyzer Oscilloscope Network Analyzer Atomic Force Microscopy Scanning Electron Microscopy
Programming Languages	C/C++ Python VB.net SQL Assembly Language HTML/PHP

ADDITIONAL INFORMATION

Honours and Awards	<ul style="list-style-type: none">• Winner of Startup Research Grant - Type 1 - La Sapienza 2021 "Sweat effect in the skin-electrode impedance of flexible dry electrodes" n. protocollo AR12117A8B4C3DF1• Awarded HEC scholarship by Higher Education Commission of Pakistan for MS leading to PhD in Engineering.• Distinction for 3rd position/120 in BS (Electronic Engineering).• 2009-2013 Fully funded scholarship for BS (Electronic Engineering), BUITEMS, Pakistan.
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