

# Bharat Lal

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## QUALIFICATIONS

- **PhD, Information and Communication Technologies**, University of Calabria Italy (In Progress)
  - **Master of Engineering (Automation and Control)**, Department of Electronic Engineering, Mehran University of Engineering & Technology, Jamshoro, Pakistan, 2018, with 1<sup>st</sup> division 3.90cgpa.  
Thesis Title: “*Design and functional verification of PSO based FIR filter in FPGA*”.
  - **Bachelor of Engineering (Electronics Engineering)**, Department of Electronic Engineering, Mehran University of Engineering & Technology, Jamshoro, Pakistan, 2016, with 1<sup>st</sup> division 3.51cgpa.  
Thesis Title: “*Automation and monitoring smart reverse osmosis water treatment plant*”.
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## TEACHING EXPERIENCE

- **Lecturer (BPS-18)**: September 2019 to Present, Department of Electronic Engineering, Mehran University of Engineering and Technology, Jamshoro, Pakistan.  
**Responsibilities:** To transfer knowledge including practical skills, methods, and techniques.  
Teach subjects and conduct Labs at the Undergraduate Level.  
To conduct research and supervise students at bachelor’s and master’s levels.  
Departmental coordinator to Outcome-Based Education.
  - **Lab Engineer**, August 2016 to June 2018, Department of Electrical Engineering, Isra University, Hyderabad, Pakistan.  
**Responsibilities:** Teach subjects and conduct Labs at the Undergraduate Level.  
To conduct research and supervise students at the undergraduate level.
  - **Instructor**, October 2017 to February 2018, Electrical Technology, Benazir Bhutto Shaheed Youth Development Program, Isra University, Hyderabad, Pakistan.
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## INDUSTRIAL EXPERIENCE

- **I&C Maintenance Engineer**: December 2018 to September 2019, CHD Power Plant Operation Co., Ltd, Operation and Maintenance project for Engro Powergen Thar Ltd., in Thar coal block II, Sindh, Pakistan.  
**Responsibilities:** Monitor and inspect the instrumentation and controls (I&C) erection/installation activities.  
Review punch list items and confirm their completeness and correctness.  
Prepare the regular site progress reports for the I&C-related parts/systems/equipment.
  - **Trainee Engineer**, June 2018 to November 2018, Operation and Maintenance department, CHD Power Plant Operation Co., Ltd, Guizhou, China.  
**Responsibilities:** Classroom training, software simulation training, and onsite training for the operation and maintenance of thermal power plants.
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## PROFESSIONAL MEMBERSHIPS

- Registered Engineer, Pakistan Engineering Council, Registered Engineer (ELECTRO/23230)
  - Professional Member Institute of Electrical and Electronics Engineers (IEEE)
  - Professional Member, IEEE Instrumentation and Measurement Society.
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## SKILLS

- Working knowledge of Assembly, C, C++, VHDL/Verilog, and Python. Embedded Systems design using ARM microcontrollers & FPGA. Knowledge of Matlab, LabVIEW, Keil MDK, and Vivado/Xilinx Systems Generator. Experience in Graphics Designing. DCS installation, troubleshooting, and Logic design & modification.

## AWARDS & PROFESSIONAL TRAININGS

- **Gold Medal**, Best research paper award, in IEEE International Multi-topic Symposium 2022. Paper Title: “Smart Concrete Strength Measurement Device”
  - **Multimedia and Graphics designing, four months training**, under Benazir Bhutto Shaheed Youth Development Project at AIMS center Hyderabad.
  - **International Conferences attended:** 3rd International Multi-Topic Conference 2013, 29th IEEE International Symposium 2014, 4th International Multi-Topic Conference 2015, International Workshop on Embedded System and Applications 2015, Global Conference on Wireless and Optical Communication Spain 2017, IEEE Pakistan Students’ Gold WIE Conference 2013, 29th IEEE All Pakistan Students' Seminar 2014.
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## RESEARCH INTEREST

- Artificial Intelligence and Machine Learning, Computer Vision, Compressed Sensing, Automation, and Control, Embedded Systems Design, SoC Design, Optimization algorithms for Signal processing,
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## RESEARCH PUBLICATIONS

1. J. Abbasi, L. Alina, A. M. Abro and **Bharat Lal**, "SEHAT: Smart E-Health App for Telediagnosis and first opinion," 2021 6th International Multi-Topic ICT Conference (IMTIC), 2021, pp. 1-6, doi: 10.1109/IMTIC53841.2021.9719812.
2. Z. Ali, **Bharat Lal**, T. D. Memon, N. Nafi, U. R. Memon, “Digital FIR Filter Design by PSO and its variants Attractive and Repulsive PSO(ARPSO) & Crazy based PSO(CRPSO)”, International Journal of Recent Technology and Engineering, Vol. 9, No. 6, Mar. 2021.
3. M. A. Faheem, D. K. Soother, **Bharat Lal**, J. Kumari, and A. Qureshi, “A Deep Learning based Non-invasive and Real Time Fault Detection System for 3-Phase Induction Motor” Sukkur IBA Journal of Emerging Technologies, Vol. 3, No. 1, 2021.
4. Aisha Baloch, Tayab D Memon, Farida Memon, **Bharat Lal**, Ved Viyas, Tony Jan, " Hardware Synthesize and Performance Analysis of Intelligent Transportation Using Canny Edge Detection Algorithm", International Journal of Engineering and Manufacturing (IJEM), Vol.11, No.4, pp. 22-32, 2021.
5. **Bharat Lal**, Shaikh F., B. A. Arain, T. D. Memon and I. H. Kalwar, “FPGA based Synthesize of PSO Algorithm and its Area-Performance Analysis” International Journal of Advanced Computer Science and Applications, Vol. 9, No. 6, June 2018.
6. **Bharat Lal**, S. Sagar, M. Arain, B. A. Arain, F. Shaikh, “Automation and Monitoring of Reverse Osmosis Water Treatment Plant” International Journal of Engineering and Advanced Technology (IJEAT), Vol. 8, No.2, December 2018.
7. B. A. Arian, F. Shaikh, **Bharat Lal**, T. D. Memon, Imtiaz Hussain Kalwar, “Design of PID Controller Based on PSO Algorithm and Its FPGA Synthesization” International Journal of Engineering and Advanced Technology (IJEAT), Vol. 8, No.2, December 2018.
8. **Bharat Lal**, W. Kumar, Z. S. Shah, H. Kazi, A. Shah, Muhammad Farrukh Shaikh, “GSM enabled SMART Reverse Osmosis System” 2nd Global Conference on Wireless and Optical Communication, September 2017, Spain.
9. F. Shaikh, I. H. Kalwar, **Bharat Lal**, T. D Memon, M. A. Kazi, “Real Time Utilization of Extended Kalman Filter Design for Railway Wheelset Dynamics”, Engineering Science and Technology International Research Journal, Vol.2, NO.1, Mar, 2018.
10. R. Akbar, S. R. Mehdi, A. Akhtar, **Bharat Lal**, N. Khaskheli and K. Shahani, “Design and Control of Unmanned Underwater Vehicle,” Sukkur IBA Journal of Emerging Technologies, Vol. 1 No. 2, December 2018.
11. M. Farrukh, I. A. Halepoto, B. S. Chowdhry, H. Kazi and **Bharat Lal**, “Design and Implementation of PLC based Automatic Liquid Distillation System,” Indian Journal of Science and Technology, Vol 10(29), August 2017.