**Resume**

**Mubarak Ahmad** (PhD)

 (Presently in Wuxi University)

 (Deep learning, Data analysis, Ultrasonic sensor design and imaging algorithm

Electrical engineer )

**Contact**

D.O.B. 1st April, 1985.

Nationality Pakistan

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V.P.O. Dagai Khaas, Muhallah Juna kheil, Tehsil Razzar, District Swabi, K.P.K., Pakistan.

**Research Area**

Remote sensing and atmospheric sounding. Assessment of aerosols and its impact on clouds and climate change, and Greenhouse gas emission analysis. I am working on machine learning algorithms for image classification. Where my main concern is satellite imagery analysis using python and MATLAB. I have also expertise in Non-destructive testing and evaluation of structures, Structural health monitoring, Ultrasonic wave imaging, Modelling and designing of smart Electromagnetic acoustic transducer (EMAT), Rayleigh wave Imaging, Electrical design and drafting, (power and control), Machine learning,. DNN, LSTM, CNN.

**Education**

**PhD in Atmospheric remote sensing and atmospheric sounding (On leave).**

Sep. 2023 to June 2026.

School of atmospheric physics.

Nanjing University of information sciences and technology, NUIST, Nanjing, China.

**PhD in Mechanical engineering (Marks 95 %).**

Sep. 2016 to June 2021.

Beijing University of technology, BJUT, China.

**MS in electrical engineering (Marks 3.38/4.0).**

Sep. 2011 to Oct. 2013.

CECOS University, Peshawar, K.P.K., Pakistan.

**BSc in electrical engineering (Marks 2.61/4.0).**

Sep. 2004 to July. 2008.

University of engineering and technology, Peshawar, K.P.K., Pakistan.

**Work Experience**

**2024-to date Wuxi University, Wuxi, China.**

I have been working here as foreign faculty member in the school of automation/ college of international education. Where I will teacher engineering subjects like computer fundamentals, mathematics and electronics.

**2016-2021 Beijing university of technology, Beijing, China.**

During my PhD, I have worked on imaging of defect using RAPID algorithm. A thin composite material has been used as an inspection material. I have also worked on 2D and 3D\_Finite element modeling using COMSOL Multiphysics. I have also worked on Linux system using Ubuntu.

I have worked on the designing of SH0 mode electromagnetic acoustic transducer (EMAT) based on oblique permanent magnets. I have also worked on the imaging of defect using Rayleigh waves in a thick Aluminum plate. Similarly, I have also worked on imaging of defect using Full waveform inversion FWI and reverse time migration RTM algorithms.

**2015-2016 Pakistan institute of engineering and applied sciences (PIEAS), Islamabad, Pakistan.**

I have spent 4 months in PIEAS as a PhD scholar, where I was working in the field of biomedical engineering. During this time, I did some experiments using EEG and EMG signals through an epoch headset device. This device was used to extract signals through different moments of a human body. This experiment was actually using two types of waves, firstly, to extract signals of a healthy body and secondly, to extract signals through a disable body. After comparison and use of proper algorithms the moments of the disable body would be controlled through a prosthetic device, such as, hand or leg.

**2014-2015 Electrical constructor**

I have worked for two years as an electrical instructor and head of the institute at COMStech College of technology, K.P.K., Pakistan. I have instructed some electrical engineering subjects, like, Digital logic design, power system analysis, power communication, computer programming and other related electrical engineering subjects.

**2014-2015 US consultant**

I was working as a research scholar and assistant to an American professor in the field of efficient modeling of smart thin films. During this project, we were modeling such a smart thin film for such areas in the world where the weather condition is not intermittent, like for some time there is a cloud on a film and sometime it has sun shine or may be some part of film has sun shine while some part has cloud shadows. So for that we need to design a control methodology in an intermittent conditions so that there may no circuitry loss in the film.

**2011-2013 CECOS university, Peshawar, KPK, Pakistan.**

After completing my master degree, I was working as a volunteer research assistant. During this time, I have done research on “Modeling and designing of Quad rotor controller” and “Simulation of blade element theory”.

**2010-2011 SEASOLE construction Pvt Ltd, Pakistan.**

**Position: Microwave and BTS engineer.**

Function: Physical Installation & Software Configuration of PDH & SDH links for Ufone and Warid.

* Configuration of NEC Microwave Equipment using PNMT.
* Configuration of Microwave Equipment (1+0, 1+1).
* Maintenance, troubleshooting and different alarms of IDU.
* Have adequate knowledge of assembling and installation of Hybrid and High, Low ODU.
* Configuration of Huawei Microwave Equipment using RTN (610,620) WEB\_LCT Old version and new version.
* Knowledge of various equipment like German GPS and Compass.
* Test calls, BTS (3012, 3012AE).
* Making Cross Connection through Software of RTN.
* Media through.

**Two months Training regarding Huawei BTS (3900, 3900 A, DBS 3900) in UET Lahore for swapping project.**

* Alarm Patching, E1 Patching.
* Using Site Master to check VSWR.
* Installation of Rectifiers and Batteries.
* To remove different Alarms of VSWR.

**2008-2010 AJ textile mills, KPK, Pakistan.**

**Position: Sr. Electrical engineer.**

Function: Supervision and maintenance of Gas Power plant of 5.5MW, 440V Generation operation and control.

Power House load Controlling, LT Panels, Different Projects on PLC Siemens, RS logix designing as a Team Member. Preparing Progress Reports. Monitors and inspects project construction activities related to Electrical works and installation, Ensures strict inspection of materials, Verification of electrical billings, make the drawings of all electrical relevant application, Preparation of single line diagram, All types of electrical wiring, Installation testing & commissioning of ATS panel, Checking the electrical megger test, continuity test, short circuit test & earth test.

**Projects**

* Line tracking robot without using microcontroller.
* Edge detecting robot without using microcontroller.
* Automatic door opening using Ultrasonic sensor in Arduino.
* Mine detection controller.

**Seminars attended at BJUT, China**

* Prof. Le, An overview of ultrasonic imaging cortical bones, University of Alberta, Canada.
* Prof. Bond, The world’s development trend of NDT&E field, Iowa state university, USA.
* Prof. `Hiroyuki, and Prof. D. Kosaka, Intelligent machinery research, Kobe University, Japan.

**Trainings**

* Verasonics customer trainings June 22-25, 2020. (U.S.A. online).
* Laser ultrasonic imaging (BJUT, China).
* EMAT ultrasonic imaging (BJUT, China).

**Skills**

Java, Linux (Ubuntu), C, C++, Python, MATLAB, Simulink, COMSOL Multiphysics, Altium designer, PLC programming, Origin Lab, Arduino, Abaqus, ArcGIS, WRF

**Languages**

* English, Urdu, Pashtu
* Chinese (Basic)

**Publications**

Journal Publications

1. Zha, C., Bu, L., Li, Z., Wang, Q., Mubarak, A., Liyanage, P., ... & Chen, W. (2023). Aerosol Optical Properties Measurement using the Orbiting High Spectral Resolution Lidar onboard DQ-1 Satellite: Retrieval and Validation. Atmospheric Measurement Techniques Discussions, 2023, 1-31.
2. Zhang, X.; Zhang, M.; Bu, L.; Fan, Z.; **Mubarak, A**. Simulation and Error Analysis of Methane Detection Globally Using Space borne IPDA Lidar. *Remote Sens.* **2023**, *15*, 3239. <https://doi.org/10.3390/rs15133239>.
3. Abdul Basit, Zenghua Liu, **Mubarak Ahmad**, Wu Bin, Cunfu He. A novel method for evaluation of surface breaking crack using position time graph, Instruments and Experimental Techniques. **2021**, 64(1):107-116. (SCI-indexed source).

<https://link.springer.com/article/10.1134/S0020441221010048>.

1. **Mubarak Ahmad**, Javed Ali Khan, Hashim Khan, Mian Izaz ur Rehman, Yawar Hayat, Liaqat Ali. "Designing of Different High Efficiency Diode Clamped Multilevel Inverters and their Performance Analysis." Industrial Engineering Letters, Vol.5, No.6, **2015**.

Conference proceedings

1. **Mubarak Ahmad**, Zenghua Liu, Abdul Basit, Wu Bin, Cunfu He. Quantitative damage imaging in plates based on shear horizontal SH0 wave mode tomographic approach, IOP Conference Series: Materials SCIENCE Engineering. **2021**, 1043:042037(17pp). (EI-indexed source).

 https://iopscience.iop.org/article/10.1088/1757-899X/1043/4/042037/meta

1. **Mubarak Ahmad**, Zenghua Liu, Abdul Basit, Wu Bin, Cunfu He. Characterization of surface crack width in plates using Rayleigh wave electromagnetic acoustic transducers, IOP Conference Series: Materials SCIENCE Engineering. **2021**, 1043:042037(17pp). (EI-indexed source).

https://iopscience.iop.org/article/10.1088/1757-899X/1043/4/042038/meta

1. **Mubarak Ahmad**, Zenghua Liu, Abdul Basit, Wu Bin, Cunfu He. Quantification of defects in an aluminum plate using direction-tunable shear horizontal wave imaging, E3S Web of Conferences. **2021**, 233:04030 (6pp). (EI: 20210609894092).

 [https://doi.org/10.1051/e3sconf/202123304030](%20%20%20%20%20%20%20%20%20%20%20%20%20%20%20https%3A//doi.org/10.1051/e3sconf/202123304030)

1. **Mubarak Ahmad**, Zenghua Liu, Abdul Basit, Riaz Wasil, Wu Bin, Cunfu He. Imaging of an aluminum plate using time-reversed shear horizontal wave and a modified damage imaging algorithm based on RAPID algorithm. (**In progress**).
2. Abdul Basit, Zenghua Liu, **Mubarak Ahmad**, Wu Bin, Cunfu He. Quantitative evaluation of a surface crack using Rayleigh waves by Electromagnetic acoustic transducers, (**In progress**).

**References**

1. Prof. Zenghua Liu (liuzenghua@bjut.edu.cn)
2. Prof. Cunfu He (hecunfu@bjut.edu.cn)
3. Dr. Maqbool Ahmad (qazi.maqbool@yahoo.com)