

Brief Details of the Lab

The biomedical research lab is established with the objective to come out with innovative research-based solution in the area of biomedical engineering and instrumentation. The lab is equipped with state of art equipment and focuses in the development of medical devices that deals with the rehabilitation and pain management. The research has been conducted on measurement of human body composition, assessment of human physiological parameters, use of acoustic signal to modulate human perception and qualitative analysis of chemical compounds. The lab has active research collaboration with reputed national and International institutes/research organization such DRDO, Wright State University etc.

Link:

1. Team Members

Dr. Munna Khan (Professor)

Dr. Zaheeruddin (Professor)

Dr. Shabana Mehfuz (Professor)

Dr. Kashif IK Sherwani (Assistant Professor)

Ms. Shaila PSMA Sirdeshmukh (Research Scholar)

Md. Qaiser Reza (Research Scholar)

Dr. Syed Ansar Ahmad (Research Scholar)

Dr. Mohammad Faisal (Research Scholar)

Mr. Naved Alam (Research Scholar)

Ms. Lily Kumari (Research Scholar)

Ms. Gaytri Gupta (Research Scholar)

Ms. Seema (Research Scholar)

2. Research Work

- i. Completed R & D project entitled “ Prediction and Measurement of Human Body Composition by Electrical Impedance Analysis using Electrical Impedance Tomography as Reference” Vide letter No. 1-51/FD/CA/ (010)/ 2003-04. A grant of Rs. 10.50 Lacs sponsored by AICTE, Ministry of Human Resources and Development (MHRD), Govt. of India.
- ii. Completed R & D project entitled “Biofeedback Controlled Anti G-Suit” Vide letter No. TC/ 226/ TASK-67(JMI)/ DIPAS/ 2003 starting from April 2003 to 2007. A grant of Rs. 4.15 Lacs sponsored by DRDO, Ministry of Defense, Govt. of India.
- iii. Completed R & D project entitled “Design and development of psychoacoustic devices” with Vide letter No. TC/ 361/ TASK-182(MK)/ DIPAS/ 2012 starting from May 2012 to Sept 2014. A grant of Rs. 9.95 Lacs sponsored by DRDO, Ministry of Defense, Govt. of India.
- iv. Completed R & D project entitled “vision based expert system for picking of cotton” with Vide letter No. CoEFM/CPCFM/12-13/81dated 11 Jan 2013. A grant of Rs. 79.95 Lacs sponsored by DST, Ministry of Sciences and Technology, Govt. of India

3. Publications:

Patent

1. Patent published on 9 April 2021 with application No. 202111014763A entitled "APPARATUS AND METHOD FOR WOUND HEALING" applied on 31 March 2021.
2. Patent published on 8 January 2021 with application No. 202011052412A entitled "APPARATUS AND METHOD FOR DETERMINING AND ANALYZING BODY COMPOSITION" applied on 02 December 2020.
3. Patent published on 1 May 2020 with application No. 202011011219 entitled "POCKET SIZE PORTABLE WI-FI BASED BIO-ELECTRICAL IMPEDANCE MEASURING DEVICE" applied on 16 March 2020.
4. Patent published on 17 Jan 2020 with application No. 202011001310A entitled "Force Measurement System for Masticatory Muscles" applied on 11 Jan 2020.
5. Patent published on 16 March 2018 with application No. 201811004169A entitled "THERAPEUTIC APPARATUS FOR POSTURE AND BALANCE" applied on 04 Feb 2018.
6. Patent published on 19 Feb 2016 with application No.3500/DEL/2015A entitled "PORTABLE COTTON BALL PLUCKING DEVICE" applied on 28 October 2015.

Journal

1. Khan M, Reza MQ, Salhan AK, Shaila PSMA Sirdeshmukh (2021). Classification of oils by ECOC based multi-class SVM using spectral analysis of acoustic signals. *Applied Acoustics*, 183 (12): 108273. ISSN No. 0003682X, 1872910X.
2. Ahmad SA, Hasan S, Saeed S, Khan A, Khan M (2021). Low-level laser therapy in temporomandibular joint disorders: a systematic review. *Journal of medicine and Life*, 14 (2): 148-162. ISSN No. 1844-122x, 1844-3117
3. Kashif I.K.S., Kumar N., Chemori A, Khan M, Mohammed S (2020). RISE-based adaptive control for EICoSI exoskeleton to assist knee joint mobility. *Robotics and Autonomous Systems*, 124 (2): 1-11, Paper ID: 103354. ISSN No. 09218890.
4. Khan M, Brajesh KM, Pal K. (2021). Design and Development of Software and Hardware Modules of Bioimpedance System Using LTSpice. *Lecture Notes in Electrical Engineering*, vol 701: 187-199.
5. Pawar C, Khan M, Saini JP (2021). Validity and reliability of micro-controller based BIA instrument for assessment of upper and lower limb in male subjects at multi-frequency. *Journal of University of Shanghai for Science and Technology*, 23 (8): 262-770. ISSN: 1007-6735. DOI: 10.51201/JUSST/21/07181
6. Ahmad SA, Khan M, Iqbal MA, Rao F (2021). Measurement of Bite Force in Adult Population of North India Using Two Different Bite Force Measuring Devices. *Turkish Online Journal of Qualitative Inquiry*, 12 (9): 1679-1684. E-ISSN: 1309-6591.
7. Pawar C, Khan M, Saini JP (2020). Assessment of Human Arm Bioelectrical Impedance using Microcontroller Based System. *International Journal of Integrated Engineering*, 12 (4): 172-181. ISSN No. 2229838X.

8. Khan M and Alam N (2020). Low level laser therapy for non-invasive dental applications: A review. *International Journal of Engineering Research & Technology* 2020; 9(7): 1556-1562. ISSN No. 2278-0181.
9. Brajesh KM, Pal K, Khan M (2020). Assessment of Human Joints Using Bioelectrical Impedance Technique. *Studies in Indian Place Names (UGC Care Journal)* 2020; 40: 278. ISSN No. 23943114.
10. Khan M, Reza MQ, Salhan AK, Shaila PSMA Sirdeshmukh (2019). Acoustic resonance spectroscopy based simple system for spectral characterization and classification of materials. *Journal of Intelligent & Fuzzy Systems*, 36(5): 4389-4397. ISSN No. 18758967, 10641246.
11. Khan M, Khan, MT, Hasan M (2019). High efficiency RF energy harvesting CNTFET rectifier for bio-implants applications. *International Journal of Engineering and Advanced Technology* 9(1), pp. 4396-4402. ISSN No. 22498958.
12. Sherwani K, Kumar N, and Khan M (2018). Effect of Voluntary and Involuntary Joint Movement on EEG Signals. *Journal of Scientific & Industrial Research*, 77 (12): 710-712. ISSN No. 09751084, 00224456.
13. Khan M and Jahan M (2018). Classification of myoelectric signal for sub-vocal Hindi phoneme speech recognition. *Journal of Intelligent & Fuzzy Systems*, 35(5): 5585-5592. DO: 10.3233/JIFS-161067; ISSN No. 18758967, 10641246
14. Pawar C, Khan M, Saini JP (2018). Design and analysis of adjustable constant current source with multi frequency for measurement of bioelectrical impedance. *International Journal of Applied Engineering Research*, 13 (1): 262-267. ISSN No. 09739769, 09734562.
15. Khan M, Mahmoud ASA (2018). TS Fuzzy Controller of Maglev System Based on Relaxed Stabilization Conditions. *Lecture Notes in Networks and Systems*; Springer Nature 2018; 7: 555-563. ISSN No. 23673370.
16. Khan MT, Khan M, Hasan M (2018). Low voltage CNTFET rectifier for wirelessly power up of implantable devices. *International Journal of Research and Analytical Reviews* 2018; 5: 126-132. ISSN No. 23481269, 23495138.
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20. Khan M, Vashisth S, Vijay R, Salhan AK (2016). Non-invasive measurement and subsequent analysis of human carotid pulse for ground based simulation of G-stress. *International Journal of Bioinformatics Research and Applications*, 12(3): 227-237. ISSN No. 17445493, 17445485.
21. Mahmoud ASA, Khan M, Siddique AS (2016). Robust H_∞ State feedback controller for discrete-time takagi-sugeno systems. *Journal of Electrical Engineering*, 16(4): 467-473. ISSN No. 13353632.
22. Sharma BB and Khan M (2016). Acoustic Source Perception of Human under Noise: A Comparative Assessment. *International Journal of Computer Applications*, 2: 1-4. ISSN No. 09758887.
23. Khan M and Jahan M (2016). Sub-vocal speech pattern recognition of Hindi alphabet with surface electromyography signal. *Perspectives in Science*, 8: 558-560. ISSN No. 22130209.
24. Khan M, Sirdeshmukh SPSMA, Javed K (2016). Evaluation of bone fracture in animal model using bio-electrical impedance analysis. *Perspectives in Science*, 8: 567-569. ISSN No. 22130209.
25. Khan M, Sharma BB, Javed K (2016). Pervasive Approach to Acoustic Source Perception in Horizontal Plane. *Perspectives in Science*, 8: 667-669. ISSN No. 22130209.
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54. Khan M. Computer design of biofeedback controller for an anti G suit. *Indian Journal of Aerospace Medicine* 2004; 48 (2): 63-67. ISSN No. 0970-6666. **Protected by US copyright Law.**
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4. Research Facilities:

Nexus 4 Biotracer

Spectrum Analyzer

Digital Storage Oscilloscope

LCR meter

Universal PLC platform 2400G

Digital Sphygmomanometer

5. Alumni

Kashif IK Sherwani (2020)

Mohd Tauheed Khan (2020)

Bharat B Sharma (2018)

Mosarrat Jahan (2018)

Amged S.A. Mahmoud (2018)

Ajai Kumar Singh (2016)

Savita Sondhi (2016)

Ghazala Parveen (2015)

Sharda Vasisth (2015)

Deepali Bansal (2011)

Shabana Urooj (2011)

PN Goswami (2010)

6. Gallery





