SIDRA KHANAM

ASSISTANT PROFESSOR

Department of Mechanical Engineering, Faculty of Engineering & Technology, AMU, Aligarh

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TEACHING EXPERIENCE

- Asst. Prof. Aligarh Muslim University: From 4 July 2016 to Present
- Asst. Prof. (Sel. Grade) The Northcap University, Gurgaon: From 22 July 2015 to 1 July 2016
- Teaching Assistant ITMMEC, IIT Delhi: Jan 2011 – Dec 2014 for the courses: Diagnostic Maintenance and Condition Monitoring, Noise Monitoring and Control

Subjects Taught

- AT UNDER-GRADUATE LEVEL: Engineering Graphics and Drawing, Machine Drawing, Applied Mechanics, Machine Design Practice, Dynamics of Machines, Computer Aided Design, Vibrations Lab.
- AT GRADUATE LEVEL: Rotor Dynamics, Advanced Mechanics of Solids,
- AT POST-GRADUATE LEVEL: Vibration based Condition Monitoring of Rotating Machinery

RESEARCH INTERESTS

- Mechanical vibrations
- Vibration analysis of rolling bearings with defects
- Modelling of defects in rolling element bearings and gears
- Detection and diagnosis of defects in rolling element bearings and gears
- Signal processing of the vibration signals of rotor bearing system
- Noise removal from the signal for extraction of pure information generated by the rotor bearing to help in identification and location of defects

RESEARCH PUBLICATIONS

Citations: 178, h-index: 5, i10-index: 4 (As per Google Scholar, dated 2/12/2020)

Journal Publications

1. Khanam, S., Dutt, J. K., Tandon, N., 2014, **Extracting Rolling Element Bearing Faults from Noisy Vibration Signal Using Kalman Filter,** ASME Journal of Vibration and Acoustics, 136, pp. 031008-1-11.

2. Khanam, S., Tandon, N., Dutt, J. K., 2014**, Fault Size Estimation in the Outer Race of Ball Bearing Using Discrete Wavelet Transform of the Vibration Signal,** Procedia Technology, 14, pp. 12-19.

3. Khanam, S., Dutt, J. K., Tandon, N., 2015, **Impact Force Based Model for Bearing Local Fault Identification,** ASME Journal of Vibration and Acoustics, 137, 051002-1-13.

4. Khanam, S., Tandon, N., and Dutt, J. K., 2016, **Multi-Event Excitation Force Model for Inner Race Defect in Rolling Element Bearing,** ASME Journal of Tribology, 138, pp. 011106-1-15.

5. Khanam, S., Tandon, N., Dutt, J. K., 2016**, A System Dynamic Approach to Bearing Fault Identification with the Application of Kalman and H_∞ Filters,** Journal of Vibration and Control, 22(13), pp. 3032-3056.

Book Chapters

1. Khanam, S., Tandon, N., and Dutt, J. K., 2015, **Force Analysis due to Local Defect in Rolling Bearings for Fault Diagnosis,** Proceedings of the 9th IFToMM International Conference on Rotor Dynamics, pp.577-586, Springer Cham.

2. Khanam, S., and Tandon, N., 2020, **Investigations into Some Parameters of Vibration Signal of Faulty Bearings with Wavelet Transform,** Recent Developments in Acoustics, pp. 251-262, Springer Singapore.

3. Gautam, S., Khanam, S., and Tandon, N., 2020, **Dynamic Analysis for Healthy and Defective Gears: A Review,** Recent Developments in Acoustics, pp. 193-205, Springer Singapore.

Conference Proceedings/Presentations

1. Khanam, S., Tandon, N., and Dutt, J. K., 2012, **Fault Identification of Rolling Element Bearings from Vibration Signals: An Application of Kalman and H_∞ Filters,** 10th International Conference on Vibrations in Rotating Machinery (VIRM10), IMechE, London, September 11-13, pp.703-713.

2. Khanam, S., Tandon, N., and Dutt, J. K., 2014, **Force Analysis due to Local Defect in Rolling Bearings for Fault Diagnosis,** 9th IFToMM International Conference on Rotor Dynamics, Politecnico di Milano, Italy, September 22-25, pp. 201.

3. Khanam, S., Tandon, N., Dutt, J. K., 2014**, "Fault Size Estimation in the Outer Race of Ball Bearing Using Discrete Wavelet Transform of the Vibration Signal,"** *2nd International Conference on Innovations in Automation and Mechatronics Engineering (ICIAME 2014), Vallabh Vidyanagar, Gujarat, India,* March 7-8.

4. Gautam, S., Tandon, N., and Khanam, S., 2015, **Defect Detection Methods for Gears: A Review**, *2nd International and 17th National Conference on Machines and Mechanisms (iNaCoMM15-183), IIT Kanpur, India*, December 16-18, pp. 1-8.

5. Khanam, S., Tandon, N., and Dutt, J. K., 2016, **A Review of Vibration Modeling of Ball Bearings with Local Defect,** Proceedings of the International Conference on Condition Monitoring, Vizag, India, October 26-27.

6. Khanam, S., Tandon, N., and Dutt, J. K., 2016, **Bearing Health Monitoring from Vibration Signals: A Review,** International Symposium on Acoustics for Engineering Applications (NSA-2016), Gurgaon, India, November 17-19, pp. 1-7.

7. Khanam, S., Tandon, N., and Dutt, J. K., 2017, **Analytical Force Model of a Local Fault in Ball Bearing,** 3rd Indian Conference on Applied Mechanics (INCAM) 17, MNNIT Allahabad, India, July 5-7, pp. 1-6.

8. Khanam, S., and Tandon, N., 2017, **Investigations into Some Parameters of Vibration Signal of Faulty Bearings with Wavelet Transform,** 46th National Symposium on Acoustics (NSA-2017), Aligarh, India, October 28-30.

9. Gautam, S., Khanam, S., and Tandon, N., 2017, **Dynamic Analysis for Healthy and Defective Gears: A Review,** 46th National Symposium on Acoustics (NSA-2017), Aligarh, India, October 28-30.

10. Jamil, M. A., and Khanam, S., 2018, **Vibration Analysis of Rolling Element Bearings with Multiple Defects: A Review,** Western Pacific Commission for Acoustics (WESPAC-2018), New Delhi, India, November 11-15.

11. Khanam, S., 2019, **Vibration Analysis of Ball Bearing with Coexisting Local Defect on Races,** Proceedings of the National Conference on Condition Monitoring (NCCM-2019), Vijaywada, India, Sept 20- 21.

12. Jamil, M. A., Khan, M. F., and Khanam, S., 2020, **Significance of Locus of Defects and Sampling Rate on Artificially Intelligent Fault Detection in Ball Bearings,** Proceedings of

International Conference on Recent Advances in Engineering & Science (ICRAES-2020), Aligarh, India, January 11-12, pp. 238.

13. Mufazzal, S., Muzakkir, S.M., and Khanam, S., 2020, **Numerical Study of Contact Stiffness and Damping of Lubricated Ball Bearing Under Different Loads and Speeds considering Elasto-Hydrodynamic Lubrication**, Second Vibration Institute Middle East Conference (VIMECONF- 2020), Virtual on Whova, October 26-28, Paper No. 26**.**

SCHOLASTICS

- **PhD** (Course work: 9.2 CGPA) **(Title: Vibration Analysis and Feature Extraction of Ball Bearings with Local Defect)** from Indian Institute of Technology Delhi in 2016.
- **B. Tech** (9.068 CPI) **in Mechanical Engineering** from ZHCET, Aligarh Muslim University, Aligarh in 2009.
- **12th** with 72% from Aligarh Muslim University, Aligarh in 2004.
- **10th** with 85% from St. Mary's Senior Secondary School, Banda in 2002, CBSE Board.

ACADEMIC ACHIEVEMENTS, AWARDS AND HONOURS

- Certificate of Merit awarded for successfully passing the online examination of One-Week Comprehensive Online Training Program on "Condition Monitoring: Level 1" Organized by Adani Institute of Infrastructure Engineering (AIIE), Ahmedabad in association with Adani Electricity Mumbai Ltd, Dahanu for the period 21st to 25th September 2020.
- Certificate of Reviewing Award April, 2020 by the Editors of Measurement.
- Certificate of Reviewing Award June, 2020 by the Editors of Journal of Sound and Vibration.
- Certificate of Reviewing Award May, 2019 by the Editors of Journal of Sound and Vibration.
- Certificate of Reviewing Award November, 2017 by the Editors of Measurement.
- Awarded **Young Woman Award** in Mechanical Engineering by Venus International Women Awards (VIWA 2018).
- Awarded the **Travel grant from DST** to attend IFToMM ICORD2014 at Milan, Italy in 2014.
- Nominated from the Centre for presenting poster on research work in the National Science Day Celebration 2013 at IIT Delhi.
- Awarded the **Travel grant from IIT Delhi** to attend VIRM10 at London in 2012.
- Selected as the **best paper presenter** of the session at **VIRM10** organized by IMechE at London in 2012.
- **Maulana Tufail Ahmad Medal** for **First Position in B. Tech** Mechanical Engineering.
- Qualified **GATE with 95.27** percentile in the year 2009.
- **Gold Medalist** in Mechanical Engineering.
- Departmental Merit Scholarship for second position in class for the session 2007-08.
- Departmental Merit Scholarship for second position in class for the session 2006-07.
- Bharat Sewa Trust Merit Scholarship the session 2006-07.

RESEARCH PROJECT/GRANTS

Successful Completion of Project titled "Vibration Study of Multiple Defects in Rolling Element Bearings" with a grant of Rs. 8 Lakhs by University Grants Commission under UGC Start-up Grant.

SKILL ENHANCEMENT PROGRAMME

Courses

1. Two Weeks Online Professional Training (self-paced) on "Open Source Tool: SCILAB" organized by Department of Electronics Engineering, AMU, Aligarh in association with Spoken Tutorial Project, IIT Bombay from 26th September to 9th October 2020.
2. One week online Faculty Development Programme on "Vibration Analysis and Condition Monitoring for Rotating Machines" organized at Indira Gandhi Institute of Technology, Sarang, Dhenkanal,

Odisha, 05-09 October 2020.

3. One Week Comprehensive Online Training Program on "Condition Monitoring: Level 1" organized by Adani Institute of Infrastructure Engineering (AIIE) and Adani Dahanu Thermal Power Station (ADTPS), Dahanu during 21st September to 25th September 2020.
4. COMSOL Multiphysics® Online Intensive Training Course from July 20-31, 2020.
5. Web Training on "Systematic Approach for NVH Problem Solving Techniques" (5 Days) organized by Altair India Trainings from 25-29 May, 2020.
6. 'Online Teaching Course' organized by UGC HRDC, AMU, Aligarh from 20-23 April 2020.
7. Short Term Course on "Vibrations in Rotating Machinery" held at IIT Delhi from 3-6 March 2020.
8. One week FDP and Induction Training on "Teaching, Learning, Research and Evaluation Strategies" held on 19-23 March 2018 at Department of Mechanical Engineering, AMU.
9. Orientation Programme at UGC Human Resource Development Centre (HRDC), AMU, Aligarh, 8 May- 6 June, 2017.
10. FDP and finishing school on ANSYS Structural and Fluid (Advance), 17-31 March 2017, organized by Department of Mechanical Engineering, Aligarh Muslim University, Aligarh.
11. Short Term Course on Machinery Condition Monitoring held at IIT Kharagpur from 20 -22 March 2017.
12. Induction Course at UGC HRDC, AMU, Aligarh, Oct. 4-10, 2016.
13. One Week FDP and Finishing School on Computational Methods in Engineering Mechanics held on Oct. 3-7, 2016 at Department of Mechanical Engineering, AMU.

Workshops

14. One Day Workshop on Design of Experiments held on Nov. 21, 2015 at Department of Mechanical Engineering, The Northcap University, Gurgaon.
15. Third International Workshop on Advances In Asbestos-Free Friction Composites held in Feb. 2011 at IIT Delhi.

Seminars

16. One Day Seminar on 'Indian Railways: Industrial Automation in a Connected World' held on 7 January 2020 in New Delhi.
17. Panel Discussion of Showcasing of Green Campus Initiative of AMU at UGC HRDC, AMU, Aligarh on World Environment Day, June 5, 2017.

Webinars

18. Webinar on "*Smart Factory Solutions-Digital Twin*" organized by Central Manufacturing Technology Institute, under SAMARTH Udyog Bharat 4.0 Platform on September 16 2020.
19. Webinar on "*Blockchain Technology*" organized by Central Manufacturing Technology Institute, under SAMARTH Udyog Bharat 4.0 Platform on September 15 2020.
20. Webinar on "*Industry 4.0 Technology Pillars*" organized by Central Manufacturing Technology Institute, under SAMARTH Udyog Bharat 4.0 Platform on September 14 2020.
21. Webinar on "*Condition Based Monitoring for CNC Machine Tools*" organized by Central Manufacturing Technology Institute, under SAMARTH Udyog Bharat 4.0 Platform on September 09 2020.
22. Webinar on "*Online Teaching & Learning and Its Effect on Social Life*" organized by Department of Automobile Engineering, M.H. Saboo Siddik College Of Engineering on 4 June 2020.

EXPANDED ROLES

Occupational External

- ❒ Editorial Board Member of American Journal of Mechanics and Applications (AJMA) published by Science Publishing Group. ISSN Print: 2376-6115ISSN Online: 2376-6131 from April 09, 2020.
- ❒ Executive Committee Member of Condition Monitoring Society of India from 01 Oct. 2019.

- ❒ Editorial Board Member of International Journal of Applied Science published by IDEAS SPREAD INC. ISSN 2576-7240 (Print)-ISSN 2576-7259 (Online).
- ❒ Reviewer for Journal of Sound and Vibration published by Elsevier.
- ❒ Reviewer for Measurement Journal published by Elsevier.
- ❒ Reviewer for National Symposium on Rotor Dynamics NSRD 2019.
- ❒ Reviewer for National Symposium on Acoustics NSA 2017.

Occupational Internal

- ❒ Joint Organizing Secretary of One week FDP and Induction Training on "Teaching, Learning, Research and Evaluation Strategies" organized by Department of Mechanical Engineering, AMU, on 19-23 March 2018.
- ❒ Member of the Reception Committee of International Conference On Ergonomics for Improved Productivity (HWWE 2017) organized by Department of Mechanical Engineering, AMU on 8-10 Dec. 2017.
- ❒ Joint Organizing Secretary of National Symposium on Acoustics (NSA-2017) organized by Department of Mechanical Engineering, AMU on 28-30 Oct. 2017.
- ❒ Organized an event on International Noise Awareness Day (26th April 2017) in association with ASI ASME Students Chapter.
- ❒ Co-Coordinator of National Workshop on Condition Monitoring of Machines (NWCMM 2016) organized by Department of Mechanical Engineering, AMU.
- ❒ Delivered an Expert Lecture in National Workshop on Condition Monitoring of Machines (NWCMM 2016) at Department of Mechanical Engineering, AMU.

MEMBERSHIP OF PROFESSIONAL BODIES

- ❒ Life Member of Condition Monitoring Society of India (CMSI): Membership No. LM1800322.
- ❒ Life Member of Acoustical Society of India (ASI): Membership No. LM-972.
- ❒ Associate Member of The Institution of Engineers (India): Membership No. AM1902973.
- ❒ Student Member of American Society of Mechanical Engineers (ASME) from 2014-15.

BEYOND CURRICULUM

- ❒ Active participation in the Open House Day 2014 held on April 2014 at IIT Delhi.
- ❒ Active participation in the Open House Day 2013 held on April 2013 at IIT Delhi.
- ❒ Active member of student's grievances redressal Committee holding the post of Class Representative in B. Tech (2007-2009).
- ❒ Active participation in Robotics Workshop held in the session 2007-08 in ZHCET, AMU.

TECHNICAL FORTE

Proficiency : MS Word, MS Office, MS Excel
Applications : AutoCAD, Pro-E wildfire 2.0, MATLAB, ANSYS, COMSOL Multiphysics®

PERSONAL VITAE

Father's Name : Dr. Maqsood Husain Khan
Mother's Name : Rahmatun Nisa Khanam
Date of Birth : 7th April, 1987
Sex : Female
Marital Status : Married
Residential Address : C-1, Shah House, Hathi Dooba, Noor Bagh, Amir Nishan, ALIGARH-202002
Permanent Address : Mahmood Manzil, Moh- Chhawni, Distt- Banda, UTTAR PRADESH 210001
Linguistic Abilities : English, Hindi, Urdu

REFERENCES AVAILABLE TO CONTACT

Prof. N. Tandon (email: ntandon@itmmec.iitd.ernet.in) Emeritus Professor, CART (Previously ITMMEC), IIT Delhi-110016, India
Prof. Tandon is my Ph. D Supervisor

Prof. J. K. Dutt (email:jkdutt@gmail.com) Professor, Department of Mechanical Engineering, IIT Delhi-110016, India
Prof. Dutt is my Ph. D Co-Supervisor