CURRICULUM VITAE

Dr. FAIZ IQBAL
Lecturer – Mechanical Engineering
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EDUCATION

Ph.D[1] in Manufacturing Automation (2014 - 2019)
Indian Institute of Technology Delhi, New Delhi, India

Master of Technology in Mechatronics Engineering (2011-2013)
Amity University, Noida, India (CGPA: 9.5/10)

Bachelor of Technology in Mechanical & Automation Engineering (2007-2011)
Maharshi Dayanand University, Rohtak, India (Percentage: 72.56% with Honours)

Senior secondary school certificate examinations (2006) – Equivalent to A-levels in UK
Central Board of Secondary Education (CBSE) India (Percentage: 63.6%)

Secondary school certificate examinations (2004) – Equivalent to GSCE in UK
Indian council for secondary education (ICSE) India (Percentage: 73.5%)

Online courses for personal developement

1. Python for everybody specialization from Coursera in May 2019. Coursera credential ID: KL4GSXLR332M
2. Digital Manufacturing & Design Technology Specialization from Coursera in May 2020. Coursera credential ID: YQNQG46TG9HJ
3. p2i online course "Empowering researchers to innovate" in June 2021. Course **offered by University of Cambridge** and partners.

Work Experience

Lecturer – (01/08/2022 – Present)
Organisation: School of Engineering, University of Lincoln, Lincoln, United Kingdom.
Mechanical Engineering

Assistant Professor – (15/09/2021 – 30/06/2022)
Organisation: School of Engineering, Mahindra University, Hyderabad, Telangana, India.
Mechatronics and Industrial Automation.

[1] Phd thesis title: Closed loop control of ball-end magnetorheological finishing process using in-situ roughness feedback

Post-Doctoral Research Associate – (29/07/2019 – 30/06/2021)
Organisation: School of Engineering, University of Edinburgh, Edinburgh, Scotland, UK.
Robotics for extreme environments.

Assistant Professor (on contract)– (10/10/2018 – 31/05/2019)
Organisation: Department of Mechanical Engineering, Jamia Millia Islamia, New Delhi, India.

Junior research fellow (JRF) – (09/09/2013 – 31/12/2013)
Organisation: Indian Institute of Technology Delhi, new Delhi, India.
Project title: Design & development of CNC magnetorheological finishing (MRF) system

Area of expertise/Research interest

Multidisciplinary areas of interest which include:
Industrial automation, Mechatronic systems, System integration, Manufacturing automation, Advanced manufacturing, Advanced Metrology, Robotics, Smart/Digital Manufacturing and Industry-4.0, **PLC & SCADA/HMI based systems**, Motion control, **Pneumatics & Hydraulics based automation systems**, Applications of embedded systems in manufacturing, Sensors and transducers, Surface Metrology, Non conventional machining, Machining processes and analysis.

GRANTS

Research Grants:

- Secured **~£51000.00** funding for COVID-19 project titled **'Automated pH balanced manufacturing of Hypochlorous acid-based disinfectant'** – Project partners were University of Edinburgh, and Aqualution systems Ltd. (Scottish micro-SME) **Role: Principal Investigator**
  For this project, I was nominated for Scottish Knowldege Exchange award in Covid-19 collaborative response category, among top 3 finalists.
  Was awarded The Covid-19 Engineering medal by School of Engineering, The University of Edinburgh.
  (project dates: 20/04/20 – 20/12/20)
  Funded by: EPSRC through IAA scheme
- Awarded a place on highly competitive **ICURe program** NxNW consortium Cohort F for market discovery of our **Fluidic Robotics** Technology. Further awarded 3 months of extended funding after successful completion of market discovery phase. Total funding **~£25000.00**
  Funded by: Innovate UK
- Internal R&D Grant for project titled **'Transforming exisiting CNC Machine tools to Cyber-Physical Systems'.**
  Role: **Principal Investigator,** Total funding: **₹600000.00**
  (project dates: 01/11/21 – 31/10/23)

Student supervision			
S No	**Student Name**	**Thesis Title (Degree)**	**Status**
1.	Mr Zihan Chen	The simulation of state machine for a self-building modular robot **(MSc Electronics)**	**Awarded August 2020**

PUBLICATIONS – (Google scholar Profile)

List of publications (Books)

S No	Book details
1.	Magnetic field assisted finishing: Methods, Applications and Process Automation – Authors: Dilshad Ahmad Khan, Zafar Alam, **Faiz Iqbal** **Mongraph - CRC Press, Taylor & Francis.** ISBN 9781003228776, https://doi.org/10.1201/9781003228776
2.	Cyber-Physical Systems: Solutions to Pandemic Challenges – Editors: Tushar Semwal, **Faiz Iqbal** **Edited book - CRC Press, Taylor & Francis.** **ISBN:** 9781003186380, **DOI:** https://doi.org/10.1201/9781003186380
3.	Post Processing Techniques for Additive Manufacturing – Authors: , Zafar Alam, **Faiz Iqbal,** Dilshad Ahmad Khan **Edited book - CRC Press, Taylor & Francis. (Communicated)**

List of publications (Journal Papers)

S No	Publication details
1.	Development of magnetic nanoparticle based nanoabrasives for magnetorheological finishing process and all their variants - M Amir, V Mishra, R Sharma, **F Iqbal**, SW Ali, S Kumar, GS Khan **Ceramics International** – Elsevier – (https://doi.org/10.1016/j.ceramint.2022.11.033)
2.	Automated insular surface finishing by ball end magnetorheological finishing process - **F Iqbal**, Z Alam, DA Khan, S Jha **Materials and Manufacturing Processes** – Taylor & Francis –(https://dx.doi.org/10.1080/10426914.2021.2001502)
3.	Modular Robots for Enabling Operations in Unstructured Extreme Environments - Mohammed E. Sayed, Jamie O. Roberts, Karen Donaldson, Stephen T. Mahon, **Faiz Iqbal**, Boyang Li, Santiago Franco Aixela, Georgios Mastorakis, Markus P. Nemitz, Sara Bernardini, Adam A. Stokes. **Advanced Intelligent Systems – Wiley** **https://doi.org/10.1002/aisy.202000227**
4.	Modelling of transient behavior of roughness reduction in ball end magnetorheological finishing process – **F Iqbal**, Z Alam, S Jha International Journal of Abrasive Technology, 10(3), 170-192.
5.	Experimental investigations into transient roughness reduction in ball-end magneto-rheological finishing process - **F Iqbal**, S Jha Materials and Manufacturing Processes 34 (2), 224-231
6.	Closed Loop Ball End Magnetorheological Finishing Using In-situ Roughness

	Metrology - **F Iqbal**, S Jha. Experimental Techniques 42 (6), 659-669
7.	Nanofinishing of 3D surfaces by automated five-axis CNC ball end magnetorheological finishing machine using customized controller - Z Alam, **F Iqbal**, S Ganesan, S Jha. The International Journal of Advanced Manufacturing Technology, 100(5-8), 1031-1042.
8.	Automated control of three axis CNC ball end magneto-rheological finishing machine using PLC - Z Alam, **F Iqbal**, S Jha International Journal of Automation and Control 9 (3), 201-210
9.	Constant work gap perpetuation in ball end magnetorheological finishing process - **F Iqbal**, Z Alam, DA Khan, S Jha International Journal of Precision Technology 8 (2-4), 397-410
10.	In Situ Geometric Measurement of Microchannels on EN31 Steel by Laser Micromachining using Confocal Sensor - A Kumar Sahu, **F Iqbal**, A Kumar, S Jha. International Journal of Precision Technology 8 (2-4), 429-445
11.	Effect of polishing fluid composition on forces in ball end magnetorheological finishing process - Z Alam, DA Khan, **F Iqbal**, S Jha International Journal of Precision Technology 8 (2-4), 365-378
12.	Experimental investigations on the effect of relative particle sizes of abrasive and iron powder in polishing fluid composition for ball end MR finishing of copper - DA Khan, Z Alam, **F Iqbal**, S Jha International Journal of Precision Technology 8 (2-4), 354-364

List of publications (Book Chapters)

S No	Publication details
1.	Modeling and analysis of forces and finishing spot size in ball end magnetorheological finishing (BEMRF) process- Z Alam, **F Iqbal**, S Jha **Chapter 6** in book titled 'Machining and Tribology: Processes, Surfaces, Coolants, and Modeling. **Elsevier – 2022,** pp:127-161
2.	Nanofinishing of freeform surfaces using BEMRF - **F Iqbal**, S Jha **Chapter 10** in book titled 'Nanofinishing Science and Technology'. **CRC Press - 2016** pp: 255-284
3.	Part Program-Based Process Control of Ball-End Magnetorheological Finishing - **F Iqbal,** Z Alam, DA Khan, S Jha Advances in Unconventional Machining and Composites, 503-514
4.	Design and Development of Improved Ball End Magnetorheological Finishing Tool with Efficacious Cooling System - DA Khan, Z Alam, **F Iqbal**, S Jha Advances in Simulation, Product Design and Development, 557-569
5.	Design and Development of Cartridge-Based Automated Fluid Delivery System for Ball End Magnetorheological Finishing Process - Z Alam, DA Khan, **F Iqbal**, A Kumar, S Jha Advances in Simulation, Product Design and Development, 805-813
6.	A Cyber-Physical System Architecture for Smart Manufacturing - J Malhotra, **F Iqbal**, AK Sahu, S Jha Advances in Forming, Machining and Automation, 637-647

7.	Introduction to Cyber-Physical Systems and Challenges Faced due to the COVID19 Pandemic - **F Iqbal**, J Malhotra, S Jha and T Semwal **Chapter 1** in book "Cyber-Physical Systems - Solutions to Pandemic Challenges". pp: 1 - 23
8.	Transforming a Standalone Machine Tool to a Cyber-Physical System: A Use Case of BEMRF Machine Tool to Tackle the COVID-19 Restrictions **F Iqbal**, Z Alam, M Shukla, J Malhotra, S Jha **Chapter 14** in book "Cyber-Physical Systems - Solutions to Pandemic Challenges". pp: 330 - 344
9.	Additive Manufacturing and Post-processing: An Introduction **F Iqbal**, Zafar Alam, Dilshad Ahmad Khan **Chapter 1** in book "Post Processing Techniques for Additive Manufacturing". (Accepted)
10.	Laser-based Post-processing Technologies for Additive Manufactured Parts S Maheshwari, A Siddharth, Z Alam, **F Iqbal**, DA Khan **Chapter 7** in book "Post Processing Techniques for Additive Manufacturing". (Accepted)

List of publications (International conferences)

S No	Publication details
1.	**F Iqbal**, H Chouhan "Wall Climbing Robot for Rough, Grooved and Smooth Walls. International Conference on Manufacturing Excellence MANFEX 2012 held at Amity University Noida in Amy 2012.
2.	**F. Iqbal** and S. Jha "Automatic control of Ball End Magneto Rheological Finishing" presented and published in the proceedings of International conference MANFEX 2013 held at AMITY University Noida 30th & 31st May 2013.
3.	Z. Alam, D.A. Khan, **F. Iqbal,** and S. Jha, "Analysis of forces in ball end magnetorheological finishing process", presented and to be published in proceedings of 39th International MATADOR Conference on Advanced Manufacturing, 5th - 7th July 2017, University of Manchester, U.K.
4.	D. A. Khan, Z. Alam, **F. Iqbal,** and S. Jha, "A study on the effect of polishing fluid composition in ball end magnetorheological finishing of aluminum", presented and to be published in proceedings of 39th International MATADOR Conference on Advanced Manufacturing, 5th - 7th July 2017, University of Manchester, U.K.
5.	**F. Iqbal,** Z. Alam, D.A. Khan, and S. Jha, "Localized finishing by ball end magnetorheological finishing process using integrated confocal sensor for in-situ surface roughness measurement", presented and to be published in proceedings of 39th International MATADOR Conference on Advanced Manufacturing, 5th - 7th July 2017, University of Manchester, U.K.
6.	**F. Iqbal,** R. Rammohan, H. Patel, S. Jha. Design and Development of Automated Workpiece Cleaning System for Ball End Magneto-rheological Finishing Process. International Conference on Advances in Materials & Manufacturing ICAMM 2016, Vol. 1, pp. 289-295.

7.	Z. Alam, D. A. Khan, **F. Iqbal,** and S. Jha, "Effect of polishing fluid composition on forces in ball end magnetorheological finishing process", presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering (COPEN), 7th - 9th December 2017, IIT Madras, Chennai, India.
8.	D. A. Khan, Z. Alam, **F. Iqbal,** and S. Jha, "Experimental investigations on the effect of relative particle sizes of abrasive and iron powder in polishing fluid composition for ball end MR finishing of copper", presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering (COPEN), 7th - 9th December 2017, IIT Madras, Chennai, India.
9.	**F. Iqbal,** Z. Alam, D. A. Khan, and S. Jha, "Constant work gap perpetuation in ball end magnetorheological finishing process", presented and published in 10th International Conference on Precision, Meso, Micro and Nano (COPEN), 7th - 9th December 2017, IIT Madras, Chennai, India.
10.	A. Kumar, **F. Iqbal,** A. K. Sahu and S. Jha, "Non-Contact Measurement in Plate Bending using Confocal Microscopy" presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering December 07 – 09, 2017.
11.	A. K. Sahu, **F. Iqbal**, A Kumar and S.Jha, "In Situ Geometric Measurement of Microchannels on EN31 Steel by Laser Micromachining using Confocal Sensor" presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering December 07 – 09, 2017.
12.	R. Rammohan, M. Omkumar, **F. Iqbal,** S. Jha, "Evaluation of 2D and 3D Surface Roughness Parameters by MATLAB Algorithm in Ball End Magnetorheological Finishing Machine" presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering December 07 – 09, 2017.
13.	M. Srivastava, **F. Iqbal** and S. Jha, "Comparison of Surface Features of drilled Hole Generated on Titanium Grade 5 (Ti-6Al-4V) Between Dry-micro EDM and Dry-macro EDM Using Confocal Sensor" presented and published in 10th International Conference on Precision, Meso, Micro and Nano Engineering December 07 – 09, 2017.
14.	M. Osama, **F. Iqbal**, D. A. Khan, Z. Alam, "Design and Development of Novel Multipoint Epicyclic Superfinishing Tool". In Proceedings of the International Conference on Industrial and Manufacturing Systems (CIMS-2020) (pp. 601-620). Springer, Cham.
15.	M O Qidwai, **F Iqbal**, and Z Alam "Thermal analyses of Ball End Magnetorheological Finishing Tool" In Proceedings of the International Conference on Industrial and Manufacturing Systems (CIMS-2020). In production

PATENTS/TALKS/AWARDS/CONTRIBUTIONS

S.No	Details
1.	**PATENT FILED**:

Indian Application No.:	201711038585
Date of filing:	October 31st 2017
Title of Invention:	"Process And System For Nano-Finishing A Surface"
Inventors:	Professor Sunil Jha, Dr **Faiz Iqbal**
Applicant:	Indian Institute of Technology Delhi, New Delhi.

2.	**PATENT FILED**:

Indian Application No.:	202011040479
Date of filing:	September 18th 2020
Title of Invention:	"Surya stree: a battery free solar iron press and the heating system thereof"
Inventors:	Dr. Dilshad Ahmad Khan, Dr. Zafar Alam, **Dr. Faiz Iqbal**

3.	**PATENT FILED**:

Indian Application No.:	202111026033
Date of filing:	June 11th 2021
Title of Invention:	"Multi-Magnet Tool for improved Magneto-rheological Finishing"
Inventors:	**Dr. Faiz Iqbal,** Mr. Mohd. Osama, Dr. Zafar Alam, Dr. Dilshad Ahmad Khan

4.	**PATENT FILED**:

Indian Application No.:	202231011033
Date of filing:	March 01st 2022
Title of Invention:	"SYSTEM AND METHOD FOR FLEXIBLE HONING OF INTERNAL SURFACE OF ELONGATED CYLINDRICAL WORKPIECE LONGITUDINALLY"
Inventors:	Dr. Zafar Alam, Dr Arun Dayal Udai, **Dr. Faiz Iqbal**

5.	**Guest Lectures Delivered:** Topic **"Programmable Logic Controllers (PLC) for Industrial Automation" and "Practical sessions on PLC software"**at one week online e-workshop on "Condition monitoring and Industrial Automation", by Dept of Mechanical Engineering, National Institute of Technology Hamirpur, Himachal Pradesh, India.
6.	**Talk delivered:** Webinar entitled **"Current Trends in Automation & Robotics"** on 18th September 2020 to Department of Mechanical Engineering, School of Engineering & Technology, Kaziranga University, Jorhat, Assam, India.
7.	**Guest Lecture Delivered:** Topic **"Current Trends in Automation & Robotics" at** One week online AICTE sponsored Short Term Training programme on "Emerging trends in Robotics and it applications", by Dept of ECE Mepco Schlenk Engg. College, Sivakasi, Tamil Nadu, India.
8.	**Winner of the *"Gandhian Young Technological Innovation Award, 2017"*** at the Festival of Innovation held at Rashtrapati Bhawan on 5th March, 2017. (National Level Award)
9.	**Winner** of the "*National Technical Institutes Competition 2016*" at the Manufacturing Today Conference & Awards 2016 sponsored by Aditya Birla Group and hosted by ITP publishing group held at Pune on 2nd September 2016.

	(National Level Award)
10	**Led the team** towards successful design and development of i5-B CNC BEMRF machine tool at IIT Delhi as a part of the project entitled "*Design & development of CNC magnetorheological finishing (MRF) system*" under the Technology Systems Development program on ferro-fluids funded by the Department of Science and Technology, Government of India. (2014-2016). **Developed 2 nos. 5-axes CNC machine tools within the team which I was leading.**
11	**Significantly contributed** as a team member of Team dLive for the **"*Mahindra Rise Prise Driverless Car Challenge*".** Driverless car development project was initiated at IIT Delhi in 2014 after announcement of Mahindra Driverless Car Challenge.
12	Provided consultancy to OCTA TECHSYS PVT LTD as an advisor for Design and Development of PLC based SCADA systems, its automation for Education/Trainer kits. Provided design inputs on fabrication of mechanical structures, control panel design, wiring, PLC programming, to help OCTA TECHSYS deliver unique modular/scalable kits to their client.