

# Dr. Maqsood Ahmed Khan

Chairperson  
Industrial and Manufacturing Engineering  
NED University of Engineering & Tech.



## Personal Details

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## Qualification

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<b>Ph.D.</b>	Department of Mechanical and Industrial Engineering Concordia University, Montreal, Quebec, Canada	2007-2010
<b>M.Sc.</b>	Department of Mechanical Engineering NED University of Eng. and Tech., Karachi, Pakistan	1999-2001
<b>B.E.</b>	Department of Mechanical Engineering NED University of Eng. and Tech., Karachi, Pakistan	1994-1998

## PhD Thesis

Piecewise Arc Length Parameterized NURBS Tool Paths Generation for 3Axis CNC Machining of Accurate, Smooth Sculptured Surfaces

## Teaching Experience (19 years )

1. Post PhD teaching experience: Five (05) years.
2. Teaching assistant at undergraduate and master level in Concordia University, Montreal, Canada.
3. Co-Chairman of Industrial and Manufacturing Engineering Department, NED University 2010 – to date.
4. Coordinator of five master programs offered in Industrial and Manufacturing Engineering Department.
5. Coordinator of PhD program

Department	Name of Post	Grade	Date	Total Period	Brief Job Description
IMD, NED University, Karachi	Associate Professor	BPS-20	14-03-2011 To date	11 years	Teaching in undergraduate and graduate programs
IMD, NED University, Karachi	Assistant Professor	BPS-19	01-11-2004 to 14-03-2011	7 years	Teaching BE(IMD, MED) Practical(IMD, MED) Lab activities and responsibilities
IMD, NED University, Karachi	Lecturer	BPS-18	20-09-2003 to 01-11-2004	1 years and 2 months	Teaching BE(IMD) Practical(IMD, MED) Lab activities and responsibilities
IMD, NED University, Karachi	Lab Engineer	BPS-17	13-04-1999 to 08-05-2000	1 years and 1 months	Practical(IMD, MED) Lab activities and responsibilities

## Industrial Experience

1. Worked as head plant operations in a textile industry for the installation, operation, training and maintenance of CNC machines after having two months training from Switzerland (2000 to 2003).
2. Did research for solving an industrial problem faced by Pratt & Whitney Canada (a Canadian aircraft engine manufacturer; PWC's headquarters are in Longueuil, Quebec, just outside Montreal). PWC were machining turbine blade and damaging it while using spline (NURBS) interpolation. One of the objectives of my research was to propose a method to machine the blade without gouging (damaging) it.
3. I have established two laboratories CAD/CAM/CAE and Industrial Automation in NED University of Engineering and Technologies.

## Relevant Courses

S#	Courses	Classes
1	Automation and Robotics	Undergraduate
2	Computer Aided Manufacturing	Undergraduate
3	Industrial Automation & Robotics	Graduate
4	Computer Aided Design	Graduate
5	Project Evaluation and Feasibility Analysis	Graduate
6	Statistical Quality Control	Graduate
7	Advanced Computer Aided Design	PhD
8	Advanced Manufacturing Systems	PhD
9	Operations Research	PhD

## **Professional Membership**

Life time member of Pakistan Engineering Council (PEC).

Member of American Society for Mechanical Engineers (ASME).

Member of board of studies (BOS).

Member of board of faculties (BOF).

## **Scholastic honors, Conferences, Awards and Trainings**

1. Co-Chair in 5th International Mechanical Engineering Congress, 9th - 10th May, 2015, Pakistan.
2. Co-Chairman of Industrial and Manufacturing Engineering Department, NED University 2010 – to date.
3. Scholarship for Ph.D., NED University of Eng. and Tech 2007-2010
4. Session Assistant in conference by ASME Turbo Expo 2007 - Power for Land, Sea, and Air: Montreal, Canada - May 14-17, 2007.
5. One month training for CNC Wire EDM, Taiwan 2005
6. Two months training for CNC machines, Switzerland 2001

## **PhD Research Supervision**

Supervision of two Ph.D students at the department of Industrial & Manufacturing Engineering (NED University).

Co-supervision of one Ph.D student at the department of Industrial & Manufacturing Engineering (NED University).

One PhD scholar has graduated under my supervision

## **Supervision of Independent Study Projects**

Supervision of several independent study projects at postgraduate level in Industrial & Manufacturing Engineering department and Mechanical Engineering department.

1. Development of a mathematical correlation of print density and raster orientation with anisotropic mechanical properties of 3D printed part
2. Designing QA waste elimination model (QA-WEM) for Toyota global market (Corolla), Fall Semester.
3. Design and implementation of medium voltage switchgear assembly line through lean methodology. Spring Semester.
4. Conversion of linear tool path to spline tool path. Spring semester.
5. To determine the efficiency of maintenance framework in an oil and gas company and find ways to improve it.
6. Lean implementation to reduce time delay in work orders and improve overall performance at Karachi shipyard and engineering works Ltd.
7. Evaluation and bench marking of maintenance management practices at manufacturing industries in Pakistan.
8. Performance improvement in warehousing.

## **Research interests**

1. High precision NURBS tool path generation for three and five-axis CNC machining.

2. Global gouging detection and its elimination in multi-axis CNC machining.
3. Generation of planar and space offset curves with global error control for tool path generation in sculptured surface machining.
4. Design of parametric curve interpolators for precision machining.

## Publications

1. H. Arif, A. Shah, T. A. Hussain Ratlamwala, K. Kamal, and Maqsood. Ahmed, "Stirrol Engine: A combination of Nitinol (shape memory alloy) and Gamma Stirling Engine" *Revista Mexicana de Física* 2023, vol. 69 No. 3.
2. Arif H, Shah A, Ratlamwala TAH, Kamal K, Khan MA. Effect of Material Change on Stirrol Engine: A Combination of NiTiNOL (Shape Memory Alloy) and Gamma Stirling Engine. *Materials*. 2023; Vol. 16, issue 8, 3257.
3. Muhammad Fahad, Maqsood Ahmed Khan & Marianne Gilbert, "Investigation of Thermal Gel Formation of Methylcellulose in Glycols Using DSC and XRD" *Gels* 2021, 7, 205.
4. Muhammad Fahad, Mona Mujeeb & Maqsood Ahmed Khan "Effect of Process Parameters on the Compressive and Impact Strength of 3D Printed Parts" *Iranian Journal of Science and Technology, Transactions of Mechanical Engineering*, 2022.
5. Shaheen Perween, Muhammad Fahad & Maqsood A. Khan, "Systematic Experimental Evaluation of Function Based Cellular Lattice Structure Manufactured by 3D Printing" *Appl. Sci.* 2021, 11, 10489
6. Shaheryar A. Khan, Bilal A. Siddiqui, Muhammad Fahad & Maqsood A. Khan, "Evaluation of the Effect of Infill Pattern on Mechanical Strength of Additively Manufactured Specimen" *Materials Science Forum*, 2017, Vol. 887, pp. 128-132, DOI:10.4028/www.scientific.net/MSF.887.128.
7. Muhammad Fahad, Mahmood Khalid, Muhammad Nauman & Maqsood A. Khan, "Effect of deposition speed on the flatness and cylindricity of parts produced by three dimensional printing process" *Journal of Physics: Conference Series* 885 (2017) 012012, 10.1088/1742-6596/885/1/012012.
8. Shaheen Perween, Muhammad Fahad, & Maqsood Ahmed Khan: A Review of Process Development Strategies in 3D Printing, Conference on Emerging Trends in Automotive Engineering (CETAE-17), Karachi, Pakistan, 12/2017.
9. Muhammad Haris Yousuf, Muhammad Fahad, & Maqsood Ahmed Khan: Build Plate Levelling of a 3D Printer, Conference on Emerging Trends in Automotive Engineering (CETAE-17), Karachi, Pakistan, 12/2017.
10. Z. C. Chen, Maqsood A. Khan, "A new approach to generating arc length parameterized NURBS tool paths for efficient three-axis machining of smooth, accurate sculptured surfaces" *International journal of Advanced Manufacturing Technology*, 2014, Vol. 70, 1355-1368.
11. Z. C. Chen, Maqsood A. Khan, "Piecewise B-Spline Tool Paths With the Arc-Length Parameter and Their Application on High Feed, Accurate CNC Milling of Free-Form Profiles", *Trans. ASME J. Manuf. Sci. Eng.*, 2012, Vol. 134 / 031007-13.
12. Maqsood A. Khan, Z. C. Chen, "Approximation of planar offset curves with globally bounded error for B-spline NC tool paths", *International Journal of Production Research*, 2011, 1-15, iFirst.
13. Javeria Younus, Muhammad Fahad, Maqsood Ahmed Khan, "Evaluation of Maintenance Management Practices in Automotive Industries of Pakistan", *Proceedings of 5th International Mechanical Engineering Congress*, 9th - 10th May, 2015, Pakistan.

14. Javeria Younus, Muhammad Fahad, Maqsood A. Khan, "Evaluation and benchmarking of maintenance organization and planning/scheduling at Automotive Industries of Pakistan", 13th Global Conference on Sustainable Manufacturing, 16 - 18 September 2015, Binh Duong New City, Vietnam.
15. R. Siddiqui, M. Pinto, H. Rehman, Maqsood A. Khan, "Tool Path Generation for Complex Surface Machining, Using Point Cloud Data" 12th Global Conference on Sustainable Manufacturing, 22 - 24 September, 2014, Johor Bahru, Malaysia.
16. M. Fahad, M. A. Khan, M. Gilbert, "Evaluation of Thermal Gelation of F-127 in a Non-Aqueous Solvent and its Suitability as a Support Material for Additive Manufacturing", Advanced Materials Research, Vol 911, pp. 226-231, Mar. 2014.
17. Maqsood A. Khan, Z. C. Chen, "CL-Path in B-Spline Form with Global Error Control for 3-Axis Sculptured Surface Machining", Proceedings of the 2nd International Conference on Mechanical, Production and Automobile Engineering (ICMPAE'2012), April 28-29, 2012, Singapore.
18. Maqsood A. Khan, Z. C. Chen, "An Integrated Approach to Generating Accurate NURBS Cutter Location Path With Approximate Arc Length Parameter", Proceedings of the 2nd International CIRP Process Machine Interaction (PMI) Conference, June 7-9, 2010, Victoria, British Columbia, Canada.
19. Maqsood A. Khan, Z. C. Chen, "A new Approach to Generating Accurate NURBS Cutter Location paths with Arc Length Parameter", Proceedings of the ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 15-18, 2010, Montreal, Quebec, Canada.
20. Maqsood A. Khan, Z. C. Chen, "An Effective Approach to Approximating 2-D Free-Form Curve Offsets for B-Spline NC Tool Paths with Offset Error Globally Bounded", Proceedings of the ASME 2010 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 15-18, 2010, Montreal, Quebec, Canada.
21. Maqsood A. Khan, Z. C. Chen, "Arc-length parameterized NURBS path interpolation for high speed and precision machining", Proceeding of the 19th International Symposium on Air Breathing Engines, September 13-19, 2009, Montreal, Quebec, Canada.