

# Ovais Khan

Dept. of Mechanical & Industrial Engineering  
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## Professional Highlights:

- Significant experience of developing and teaching undergraduate and graduate level classes and laboratories on computational aerodynamics, computational fluid dynamics (CFD) and finite element analysis (FEA).
- Conducting extensive research activities in high-fidelity computational analysis of high-speed aerodynamics and heat transfer problems.
- Publications in peer-reviewed international journals and conference proceedings, several presentations in refereed national conferences.
- Actively participating to the American Institute of Aeronautics and Astronautics (AIAA) professional conferences and meetings. Member of Applied Aerodynamics Technical Committee of the AIAA.
- Good experience of working on commercial codes e.g. POINTWISE, GAMBIT, ANSYS, FLUENT, COBALT and OpenFOAM.
- Experienced in high performance computing for large-scale CFD simulations.

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## Educational Record:

### *University of Kentucky, 2012*

- Postdoctoral Scholar, Mechanical Engineering, Lexington, KY, USA.

### *Wichita State University, 2009*

- Ph.D., Aerospace Engineering, Wichita, KS, USA.

### *King Fahd University of Petroleum & Minerals, 2003*

- M.S., Mechanical Engineering, Dhahran, Saudi Arabia.

### *NED University of Engineering & Technology, 2000*

- B.S., Mechanical Engineering, Karachi, Pakistan.

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## Courses Taught:

- ***Texas A&M University – Kingsville, TX***
  - MEEN 3348: Heat Transfer
  - MEEN 4303: Aerodynamics
  - MEEN 4307: Aerospace System Design
- ***Tuskegee University, AL***
  - AENG 493: Computational Fluid Mechanics
  - AENG 418: Computational Modeling and Simulation
  - AENG 244: Aerodynamics (Fluid Mechanics and Thermodynamics)
  - AENG 200: Aerospace Engineering Design (Computer-aided Design)
  - AENG 242: Structure (Solid Mechanics and Mechanics of Materials)
  - Conducted and taught laboratory for Aerodynamics II (AENG 344L) using closed wind tunnel facility in the department of Aerospace Science Engineering.

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## Professional Experience:

- ***Texas A&M University – Kingsville, TX***  
***Visiting Assistant Professor - Dept. of Mech. & Indust. Engg. Fall 2019 to date***
  - Performing teaching, research and student mentoring activities on aerodynamics, heat transfer, structure and aerospace engineering design.
  - CFD simulations using high-resolution numerical scheme and advanced time stepping algorithms for modeling shock/boundary layer interaction phenomenon for various aerospace applications.

- **Tuskegee University, AL**  
*Assistant Professor - Dept. of Aerospace Sci. Engineering* *Aug 2012 to Aug 2019*
  - Teaching and research activities on CFD, thermo-fluids, aerodynamics, and aerospace engineering design.
  - Actively involved in writing research grant proposals to several governmental agencies.
  - Implementation of high-resolution numerical scheme and advanced time stepping algorithms for modeling shock/boundary layer interaction phenomenon for various aerospace applications.
- **Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA**  
*Visiting faculty – Applied Numerical Algorithm Group* *Summer 2016/2017*
  - Performed collaborative research activities with the lab scientists to simulate and study thermal/boundary layer interaction and shock reflection phenomena.
- **University of Kentucky, KY**  
*Postdoctoral Scholar - Dept. of Mechanical Engineering* *2010 to July 2012*
  - Development of charring ablator material response code.
  - Development of multi-dimensional CFD code for modeling heat transfer of re-entry vehicle. using finite volume approach.

### Honors and Awards:

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1. **Postdoctoral Research Fellowship, Nanyang Technological University (NTU), Singapore**
  - Received an offer to join the Mechanical Engineering Department, January 2011.
2. **Sigma Gamma Tau (SGT), National Aerospace Engineering Honor Society:**
  - President, SGT–Wichita State University chapter, 2006 to 2009.
3. **Ollie A. & J. O. Heskett Graduate Fellowship, 2009:** Graduate School, Wichita State University.

### Computer Skills:

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Programming languages:	FORTRAN 77/95, C++, MATLAB, MPI, MPICH2
Commercial codes:	Pointwise, ANSYS, PATRAN, COBALT, GAMBIT, FLUENT
Tools:	Mathematica, Maple, Mathcad, AutoCAD, Unigraphics
Post-processing packages:	MS Office, Surfer, Tecplot360
Operating systems:	Windows, LINUX/UNIX

### Professional Memberships/Activities:

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- Journal Referee: AIAA Journal, AIAA Journal of Spacecraft and Rockets, IEEE Transactions on Magnetics, *IMechE* Journal of Mechanical Engineering Sciences.
- Referee/reviewer: AIAA Fluid Dynamics and Applied Aerodynamics Conferences.
- Member of Applied Aerodynamics Technical Committee of the AIAA.

### Selected Publications:

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- 1) G. M. Arshed and **Ovais U. Khan**, “Problem-Independent Nonlinear Switch for Newly Designed WENO-BO-Z Scheme”, *International Journal of Computational Fluid Dynamics*, 2019 (DOI: 10.1080/10618562.2019.1601710).
- 2) **Ovais U. Khan** and G. M. Arshed, “High-Speed Flow over an Open Cavity Using High-Resolution Numerical Scheme”, AIAA 2018-1785 – 56<sup>th</sup> AIAA Aerospace Sci. Meeting, Kissimmee, FL, 2018.
- 3) **Ovais U. Khan** and G. M. Arshed, “High Resolution Numerical Schemes and Supersonic Flow over a Backward-Facing Step”, AIAA 2017-1434 – 55<sup>th</sup> AIAA Aero. Sci. Meeting, Grapevine, TX, 2017.
- 4) **Ovais U. Khan** and M. J. Khan, “Numerical Investigation of Flow Upstream of a Circular Cylinder Mounted Vertically over a Flat Plate with Gap”, *Proceedings of the IMechE, Part G: Journal of Aerospace Engineering*, Vol. 229(8), pp. 1531-1542, 2015.
- 5) **Ovais U. Khan** and Klaus A. Hoffmann, “Unsteady Supersonic Flows over a Backward-Facing Step with Applied Magnetic Field”, *AIAA J. of Spacecraft and Rockets*, Vol. 47, No. 2, pp. 405-412, May-June, 2010.