

**M. Javed Khan, Ph.D.**  
**Professor, Aerospace Science Engineering Department**  
**Tuskegee University, Tuskegee, AL 36088**  
[mjkhan@mytu.tuskegee.edu](mailto:mjkhan@mytu.tuskegee.edu) Tel: 334 727 8637; Fax: 334 724 4587

---

### **EDUCATION**

Ph. D. (Aerospace Engineering), Texas A&M University, College Station, Texas, USA  
M.S. (Aeronautical Engineering), US Air Force Institute of Technology, WPAFB, Ohio, USA  
B.E. (Aerospace Engineering), PAF College of Aeronautical Engineering Karachi University, Pakistan

### **RESEARCH INTERESTS**

Aircraft Design, Experimental Aerodynamics (Configuration Aerodynamics, Vortex Dominated Flows), PIV, Aeroelasticity, Human Factors & Simulation, Engineering Education

### **EXPERIENCE**

2010 – Till Date: Professor, Aerospace Science Engineering Department  
2000 – 2010: Associate Professor, Department of Aerospace Science Engineering Department  
1997 – 2000: Deputy Chief Project Director (Aerospace), Super-7 (now called JF-17 Thunder), a multi-national fighter aircraft development program  
1995 – 1997: Chief of Engineering PAF F-16 fleet  
1994 – 1995: Professor & Head: Department of Aerospace Engineering, College of Aeronautical Engineering, National University of Science and Technology  
1972 – 1994: Various assignments ranging from field engineering to R&D in the PAF

### **COURSES TAUGHT**

AENG 100L: Introduction to Aerospace Engineering Laboratory  
AENG 0216: Strength of Materials  
AENG 0267: Aircraft Performance  
AENG 0313: Fluid Dynamics  
AENG 0342: Aircraft Structures  
AENG 0344: Aerodynamics I  
AENG 0367: Aircraft Design & Analysis I  
AENG 0370: Aircraft Stability & Control  
AENG 0418: Computational Simulation & Analysis  
AENG 0443: Aeroelasticity  
AENG 0467: Flight Vehicle Design (Capstone)

### **PROFESSIONAL ACTIVITIES:**

Private Pilots License, FAA, USA  
Fellow, Royal Aeronautical Society (RAeS), UK  
Fellow, Institute of Engineers, Pakistan  
Associate Fellow, American Institute of Aeronautics & Astronautics (AIAA), USA  
Member, American Society of Engineering Education (ASEE), USA  
Member, Human Factors & Ergonomics Society (HFES), USA  
Editorial Advisory Board, AIAA Journal of Aircraft, 2005-Till Date  
  
Member, AIAA, Atmospheric Flight Mechanics Technical Committee, 2007 – 2010  
Member, International Advisory Committee, IBCAST, Pakistan, 2008 – Till Date  
Member, AIAA Applied Aerodynamics Technical Committee, 2003-2006  
Technical Program Chair, AIAA, 23<sup>rd</sup> Applied Aerodynamics Conference, Toronto, 2005

Reviewer, Experiments in Fluids  
Reviewer, AIAA Journal of Aircraft  
Reviewer, Journal of Mechanical Engineering Sciences, Inst. of Engineers, UK  
Reviewer, International Journal of Engineering Education  
Reviewer, Scientific Journals International  
Reviewer, Journal of Applied Fluid Mechanics  
Reviewer, AIAA Atmospheric Flight Mechanics Conferences, 2010, 2009, 2008, 2007  
Reviewer, AIAA Applied Aerodynamics Conferences. 2006, 2005  
Reviewer, 54<sup>th</sup>, 52<sup>nd</sup>, 50<sup>th</sup> Human Factors & Ergonomics Conferences

Session Chair, AIAA Aerospace Science Meeting & Exhibit, January 2011, Orlando, FL  
Session Chair, AIAA Atmospheric Flight Mechanics Conference, August 2010, Toronto, Canada  
Session Chair, AIAA Aerospace Science Meeting & Exhibit, January 2009, Orlando, FL  
Session Chair, AIAA Atmospheric Flight Mechanics Conference, August 2008, Honolulu, HI  
Session Chair, AIAA Atmospheric Flight Mechanics Conference, August 2007, Hilton Head, NC  
Session Chair, AIAA 25th Applied Aerodynamics Conference, San Francisco, CA, June 2006  
Session Chair, AIAA 43rd Aerospace Sciences Meeting, Reno, NV, Jan. 2005  
Session Chair, AIAA 22nd Applied Aerodynamics Conference, Providence, RI, August, 2004  
Reviewer, NSF-CCLI Proposals, 2004  
Panel Member, DoD NDSEG Fellowships, 2006, 2008, 2009, 2011  
Panel Member, DoD SMART Fellowships, 2007, 2010, 2011  
Panel Member, NASA Aeronautics Scholarships, 2009

Member, University Faculty Senate  
Member, University Academic Personnel Committee (Tenure & Promotion)  
Co-Chair, University Intellectual Property Committee  
College Advising Coordinator and Departmental Freshman Advisor  
Member, College ABET Committee  
Member, Industry, Alumni, Research Committee

### **SPECIAL AWARDS, FELLOWSHIPS AND OTHER HONORS:**

Faculty Achievement Award, Tuskegee University, 2010  
Boeing Welliver Faculty Fellow, 2009  
Outstanding Faculty Award for Research, College of Engineering, Architecture and Physical Sciences, Tuskegee University, 2005  
Invited Panelist, National Society of Black Engineers, 1<sup>st</sup> Aerospace Systems Conference, Los Angeles, February 2010  
Invited Speaker, IBCAST Conference, Islamabad, Pakistan, January 2010, January 2009

### **RESEARCH GRANTS**

#### **Current**

NSF ITEST Grant, \$447,000, 2009 – 2012 (PI)  
NSF CRI Grant, \$335,000, 2009-2011 (Co-PI)  
NSF HBCU-UP, \$2.5 million, 2009 – 2014 (Senior Personnel, Bio-fluid Mechanics Lead)

#### **Completed**

NSF DUE 0717561, 2007-2010, \$41,468 (PI)  
Army STTR Ph-II, \$225,000, 2006-2008 (Co-PI)

NASA-Ames Grant, \$116,000, 2005-2007 (PI)  
Army STTR Ph-I, \$33,000, 2005 (Co-PI)  
NSF HBCU-UP, \$2.5 million, 2004-2009 (Aerospace/Psychology Faculty Team Lead)  
NSF Major Research Instrumentation Grant, \$209,799, 2003-2005 (PI)

## **RESEARCH PAPERS**

### **Refereed Journal Publications**

- Assessing Professional Skill Development in Capstone Design Courses, accepted for publication in **International Journal of Engineering Education**, 2011
- **Khan, M. J.** and Tay, E., 'Flow in Plane of Symmetry Upstream of Blunt Bodies with Tip Clearance,' *Proc. IMech, Part C, **J. Mechanical Engineering Science***, 2009, 223(C7), 1597-1604. DOI: 10.1243/09544062JMES1312
- **Khan, M. J.** and Ahmed A., 'On the Mean Characteristics of the Juncture Vortex in Cross-flow Planes,' *Proc. IMechE, Part G: **J. Aerospace Engineering***, 2009, **223**(G4) 465-474. DOI: 10.1243/09544100JAERO442
- Rifki, R., Ahmed, A., and **Khan, M. J.**, 'Effect of Aspect Ratio on the End-Wall Flow of a Streamlined Cylinder,' **AIAA Journal**, 2007, Vol. 45, No. 4, pp 954-958
- Bangash, Z., Sanchez, R. P., Ahmed, A. and **Khan, M. J.**, 'Aerodynamics of Formation Flight,' **AIAA Journal of Aircraft**, 2006 vol. 43 no. 4, pp 895-906
- **Khan, M. J.** and Ahmed, A., 'Response of Vortex breakdown Induced Wing Rock to Pitching and Plunging,' **AIAA Journal of Aircraft**, 2006 vol. 43 no. 1, pp 275-279
- **Khan, M. J.** and Ahmed, A., 'Topological Model of Flow Regimes in the Plane of Symmetry of a Surface-mounted Obstacle,' **Physics of Fluids**, 17, 045101 (2005), pp 045101-1-8
- Wendt, R., Aglan, H., Livengood, S., **Khan, M.** and Ibrahim, E., 'Indoor Air Quality Characteristics of an Affordable, Energy Efficient, Healthy House,' **ASHRAE Transactions**, Vol. 110, Part 2, also presented at Summer Meeting, Nashville, TN, Jun 2004
- Ibrahim, E. A., Aglan, H., **Khan, M.**, Bhuyan, M., Wendt, R. and Livengood, S., 'Thermal Performance Characteristics of an Affordable, Energy Efficient, Healthy House,' **ASHRAE Transactions** Vol. 110, No. 2 also presented at Summer Meeting, Nashville, TN, Jun 2004
- Ali, M. and **Khan, M. J.**, 'Parallel Processing Laboratory Experiments for Undergraduates,' **Journal of SMET Education: Innovations & Research**, Dec. 2002
- **Khan, M. J.**, Trosper, R. J., and Ahmed, A., 'Dynamics of the Juncture Vortex,' Vol. 33, No. 7, **AIAA Journal**, Jul. 1995, pp. 1273-1278
- **Khan, M. J.** and Ahmed, A., 'On the Modality of Velocity Histograms in the Plane of Symmetry of a Wing-Body Juncture,' **Experiments in Fluids**, 18 (1995), pp. 164-167
- **Khan, M. J.**, Varela-Rodreguiz, E. and Ahmed, A., 'Subsonic Drag Reduction of the Space Shuttle Orbiter,' **AIAA Journal of Spacecraft and Rockets**, Vol. 32, No.1, Jan. 1995, pp. 80-84
- **Khan, M. J.** and Ahmed, A., 'Laser Doppler Velocimetry Bias in Wing-Body Juncture Flow,' **American Society of Mechanical Engineers Publication FED**-Vol. 131, 1994
- Bays-Muchmore, B., **Khan, M. J.** and Ahmed, A., 'Experimental Investigation of a Three-dimensional Bluff Body Wake,' Vol. 31, No. 3, **AIAA Journal**, Mar.1993, pp. 559-563
- **Khan, M. J.** and Ahmed, A., 'Sub-harmonic and Harmonic Response of the Wake of a Circular Cylinder,' Vol. 31, No. 1, **AIAA Journal**, Jan. 1993, pp. 208-209
- Ahmed, A. and **Khan, M. J.**, 'Role of Counter-rotating Foci-structures in Wing-Body Juncture Flow,' **Bulletin of the American Physical Society Fluid Dynamics Division**, Nov. 1993
- **Khan, M. J.** and Ahmed, A., 'Wake of a Circular Cylinder with an Oscillating Leading Edge Splitter Plate,' **American Society of Mechanical Engineers Publication FED**-Vol 128, 1991, pp. 285-286

### Refereed Conference Publications

- Co-author: Contextualizing Engineering Ethics in Capstone Projects Using the IDEALS Professional Responsibility Assessment, Mudd Design Workshop VIII "Design Education: Innovation and Entrepreneurship" Harvey Mudd College, 26–28 May 2011
- Co-author: Classroom Learning Activities to Support Capstone Project Assessment Instruments, to be presented at ASEE Conference, Summer 2011
- Davis, D., Trevisan, M., Davis, H., Gerlick, R, McCormack, J, Beyerlein, S., Thomson, P., Howe, S., Leiffer, P., Brackin, P. and **Khan, M. J.**, 'Assessing Professional Skill Development in Capstone Design Courses,' 2010 capstone Design Conference, 7-9 June 2010, Boulder CO
- Rossi, M., and **Khan, M. J.**, 'The Relationship between Elevation Angle and Visually Correlating 2D Contour Maps to 3D Terrain Depictions,' HSC09, The Huntsville Simulation Conference, Huntsville, AL, Oct 27-29, 2010
- Recktenwald, B. **Khan, M. J.**, Ahmed, A., 'Influence of Aspect Ratio on End Wall Flows of Surface Mounted Obstacles,' AIAA-2009-544, 47<sup>th</sup> AIAA Aerospace Sciences Meeting, Orlando, Florida, Jan. 5-8, 2009
- Rossi, M., **Khan, M. J.**, Lickteig, C, Schaefer, P. and Burke, T. J., 'Anytime Anywhere Terrain Visualization Training,' Proceedings IITSEC 2007, Inter-Services/Industry Training Simulation Education Conference, Orlando, FL, Oct. 2007
- Rossi, M. and **Khan, M. J.**, 'Development of and Reactions to an Interdisciplinary Course in Human Factors Psychology at Tuskegee University: Lessons Learned,' poster presentation at the International Society for Exploring Teaching and Learning (ISETL) Conference, Atlanta, GA, 11 -13 Oct 2007
- **Khan, M. J.**, Rossi, M., Heath, B., Ali, S. F. and Ward, M., 'An Experimental Study of the Effect of Out-of-the-Window Cues on Training Novice Pilots on a Flight Simulator,' Proceedings Human Factors & Ergonomics Conference, San Francisco, CA Oct. 2006
- Rossi, M., **Khan, M. J.** and Lickteig, C., 'Integrating Training and Technology to Train Terrain Visualization,' Proceedings HSC06, Huntsville Simulation Conference, Huntsville, AL, Oct. 2006
- **Khan, M. J.** and Lyons, D., 'A PIV Study of the Flow in the Plane of Symmetry of Surface-Mounted Cylinders & Cubes,' AIAA Applied Aerodynamics Conference, Jun. 2006
- Rifki, R., Ahmed, A. and **Khan, M. J.**, 'Singular Point Oscillations and Wake Coupling of a Short Aspect Ratio Bluff Body with Forward Facing Cavity,' AIAA-2006-0670, AIAA 44th Aerospace Science Meeting and Exhibit, Reno, NV, January 2006
- Heath, B., **Khan, M. J.**, Rossi, M. and Ali, S. F., 'Correlating Computed and Flight Instructor Assessments of Straight-In Landing Approaches by Novice Pilots on a Flight Simulator,' Proceedings of Huntsville Simulation Conference, October 2005, Huntsville, AL
- Rifki, R., **Khan, M. J.** and Ahmed, A., 'Effect of Aspect Ratio on Flow Field of Surface-Mounted Obstacles,' AIAA-2005-4848 , 23rd AIAA Applied Aerodynamics Conference, Toronto, Ontario, June 6-9, 2005
- Rifki, R., Ahmed, A., and **Khan, M. J.**, 'Flow field of a Two-Dimensional Forward-Facing Cavity,' 38<sup>th</sup> AIAA Fluid Dynamics Conference and Exhibit, San Francisco, CA, 5 – 8 June 2006
- **Khan, M. J.** and Ahmed, A., 'Response of Vortex breakdown Induced Wing Rock to Pitching and Plunging,' AIAA 2004-4732, 22nd Applied Aerodynamics Conference and Exhibit, 16-19 August 2004, Providence, RI
- **Khan, M. J.**, Rossi, M. and Ali, S. F., 'Using a Low Cost Flight Simulation Environment for Teaching & Interdisciplinary Research,' Proceedings of ASEE Annual Conference, Salt Lake City UT, June 2004
- Bangash, Z. A., Sanchez, R. P., Ahmed, A. and **Khan, M. J.**, 'Aerodynamics of Formation Flight,' AIAA Paper 2004-725, 42<sup>nd</sup> AIAA Aerospace Science Meeting & Exhibit, Reno, NV 5-9 Jan 2004

- **Khan, M. J.**, Rossi, M., Ali, S. F., Heath, B., Culpepper, C., and Crane, P., 'Effect of Above Real Time Training & Post Flight Feedback on Novice Pilots in a PC-Based Flight Simulator,' Proceedings of the Huntsville Simulation Conference 2003, Huntsville, AL, Oct 30-31, 2003
- **Khan, M. J.** and Ahmed, A., 'Influence of Aspect Ratio on the Dynamic Character of End-wall Flow,' Proceedings of the 1st International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, South Africa, Apr, 2002
- **Khan, M. J.** and Ahmed, A., 'On the Juncture Vortex in the Transverse Planes,' AIAA Paper 2002-0163, 40th Aerospace Sciences Meeting & Exhibit, Reno, NV, 14-17 Jan. 2002
- **Khan, M.J.** and Ahmed, A., 'Vorticity and Its Transport in Juncture Flow,' AIAA Paper 2001-2479, 19th AIAA Applied Aerodynamics Conference, Anaheim, CA, 11-14 Jun 2001
- **Khan, M. J.** and Ahmed, A., 'Mean Flow Characteristics in the Junctures of Swept Wings and Bodies,' Proceedings of the 20<sup>th</sup> International Congress of Aeronautical Sciences, Sorrento, Italy, Sept.1996
- **Khan, M. J.** and Ahmed, A., 'Turbulence Measurements in Wing-Body Juncture Flow,' Paper# AIAA 96-0413, 34th Aerospace Sciences Meeting & Exhibit of AIAA, Reno, NV, USA, Jan. 1996
- **Khan, M. J.** and Ahmed, A., 'Visualization and Image Processing of Juncture Vortex System,' Proceedings of the 7th International Symposium on Flow-Visualization, Seattle, WA, USA, Sep. 11-14, 1995
- Ahmed, A. and **Khan, M. J.**, 'Effect of Wing Sweep on Wing-Body Juncture Flow,' paper presented at the AIAA 33rd Aerospace Sciences Meeting & Exhibit, Reno, NV, USA, Jan. 1995
- Ahmed, A. and **Khan, M. J.**, 'On Wing-Body Juncture Flow,' Fourth Office of Naval Research Workshop on Vortex Shedding and Vortex Wakes Dynamics, Instabilities and Modifications, Dept of Mechanical & Aerospace Engineering, Arizona State University, Tempe, AZ, Dec. 8-10, 1993
- **Khan, M. J.**, Trospen, R. J. and Ahmed, A., 'On the Dynamics of the Juncture Vortex,' AIAA Paper No. 93-3473-CP, 1993, Proceedings of 11<sup>th</sup> AIAA Applied Aerodynamics Conference, 1993
- Bays-Muchmore, B., **Khan, M. J.** and Ahmed, A., 'Experimental Investigation of the Wake of a Bluff Body,' paper presented at the AIAA 30th Aerospace Sciences Meeting & Exhibit, Reno, NV, USA, Jan. 1992
- Ahmed, A., **Khan, M. J.** and Varela-Rodreguiz, J., 'Drag Reduction of the Space Shuttle Orbiter' Proceedings of the 9th AIAA Applied Aerodynamics Conference, 1991

#### **Short Courses**

- Davis, D., Trevisan, M., Davis, H., Gerlick, R, McCormack, J, Beyerlein, S., Thomson, P., Howe, S., Leiffer, P., Brackin, P. and **Khan, M. J.**, 'Integrating Professional Skills Assessment Curricula and Assessment in Capstone Course,' to be given at the 2010 capstone Design Conference, 7-9 June 2010, Boulder CO
- Short course on Unsteady Aerodynamics, Institute of Space Technology, Pakistan, Jan 2008
- Short course on Aeroelasticity, Institute of Space technology, Pakistan, Dec 2007
- Short Course on Aeroelasticity, National University of Science & Technology, Pakistan, Dec-Jan 2006

#### **Peer Reviewed Technical Reports**

- Rossi, M.J., **Khan, M.J.**, Nanda, S., Lickteig, C., Schaefer, P. (2009). Anytime, Anywhere Terrain Visualization Training System Combining Training Theory and Technology. Technical Report No. 1245. U.S. Army Research Institute for the Behavioral and Social Sciences, Fort Knox, KY. (peer reviewed)

### **Non-Peer Reviewed Conference Papers, Presentations and Reports**

- **Khan, M. J.**, Affane-Aji, C., and Rossi, M., 'Integrating a flight simulation environment in the class room to teach Math & Science concepts,' poster presented at the NSF ITEST Summit, Washington DC, Feb. 25-26, 2010
- Rossi, M.J. and **Khan, M. J.** 'The Development & Evaluation of a Terrain Visualization Training System', Presentation at CVMNAH Research Symposium, Tuskegee University, March 16, 2009.
- Ali, S. F., **Khan, M. J.**, Rossi, M. J., Heath, B. E., Crane, P., Ward, M., Crier, T., Knighten, T., and Culpepper, C., 'Development and Assessment of a Novel Training Package for Basic maneuvering Tasks on a Flight Simulator using Self Instruction Methods and Above Real Time Training (ARTT),' Final Technical Report, NASA Dryden Flight Research Center Grant NAG4-226, Mar 2007
- Rossi, M., **Khan, M. J.**, Ali, S. F., 'Cross Campus Collaboration between Aerospace Science Engineering & Psychology: How 7 Why,' Invited talk (presented by first author), Workshop on 'Models of Interdisciplinary Collaboration & Communication Amongst STEM Disciplines,' 15 Feb 2006, Tuskegee
- *Hill, A, Johnson, A., Craig, S., Hulin, E. III, Tarver, M., Alexander, A., Stone, R., Khan, M. J., and Rossi, M.* "The Influence of Visual Cues on Novices Learning to Fly a Turn in a Flight Simulator" Poster presented at the Workshop on Models of Interdisciplinary Collaboration and Communication among STEM Disciplines, Tuskegee University, February 15, 2007
- *Marshall, M., Ali, Z., Crawford, C., Fegans, A., Hampton, R., Lloyd, L., Rossi, M., and Khan, M. J.* 'The Effect of Out-of-the-Window Cues on Training a Level Turn on a Flight Simulator,' Poster presented at the Workshop on Models of Interdisciplinary Collaboration and Communication among STEM Disciplines, Tuskegee University, February 15, 2007.
- **Khan, M. J.**, Rossi, M., 'Interdisciplinary Research and Curriculum Development for Aerospace Science Engineering and Psychology, Poster presentation at the Workshop on 'Models of Interdisciplinary Collaboration & Communication Amongst STEM Disciplines,' 15 Feb 2006, Tuskegee
- **Khan, M. J.**, and Ali, M., 'Educating for the 'Out-Sourcing & Out-Sourced Workplace,' ASEE Southeast Section Conference, Auburn, AL, 2004
- Ali, S. F., **Khan M. J.**, Rossi, M. J., Crane, P., Heath, B. E., Knighten, T., and Culpepper, C., 'Effects of Self Instruction Methods and Above Real Time Training (ARTT) for Maneuvering Tasks on a Flight Simulator,' Final Technical Report, NASA Dryden Flight Research Center Grant NAG4-209, Mar 2003
- Ali, S. F., **Khan, M. J.**, Rossi, M. J., Crane, P., Guckenberger, D., and Bageon, K., 'Effects of Above Real Time Training (ARTT) on Individual Skills and Contribution to Crew/Team Performance,' Final Report, NASA Dryden Flight Research center Grant NAG4-169, Mar 2001