

Eric R. McFarland

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SUMMARY

Exceptional research engineer seeking a position in academic setting. Can integrate industrial research experience into existing programs and develop new projects for research team. Keenly interested in the educational process, and seeing students succeed. Effective communicator both verbally and in writing. Outstanding problem solver with excellent organizational, management, and team building skills. Experienced developer of computer programs for general use. Industry consultant on turbomachinery aerodynamics.

SKILLS

Project Management	Computational Fluid Mechanics	Computer Programming
Team/Group Working	Mathematical Analysis	FORTRAN, PL/I
Teacher/Instructor	Turbomachinery	C,C++, BASIC
Leadership	Aero Design & Heat Transfer	MS Office Products

EXPERIENCE

Project Management

- Tennessee Higher Education Commission and SimCenter advisory board member for the University of Tennessee at Chattanooga.
- Lead team to develop, analyze, and evaluate low speed propulsion system computational fluid dynamics (CFD) for the National Aerospace Plane (NASP) project. Participated as member of the NASP propulsion concepts team, the CFD support team, and the source evaluation boards for several NASP contracts.
- Served as liaison coordinating efforts between university, industry, and government on the development and implementation of the MSU TURBO computer program (a solution of the Reynolds averaged unsteady Navier-Stokes equations when applied to multi-stage turbomachinery flows).
- Lead engineer for research conducted in NASA Glenn Transonic Flutter Cascade
- Managed multiple university research grants and contracts totaling \$750,000/year.

Research Engineer

- Analyzed flow properties and aerodynamic loads on airfoils in NASA Glenn Transonic Flutter Cascade and Icing Research Wind Tunnel.
- Designed aerodynamic shapes of corner turning vanes in various NASA wind tunnels and the low speed research compressor at Illinois Institute of Technology
- Developed one dimensional compressible fluid flow analysis to rapidly evaluate National Aerospace Plane (NASP) propulsion concepts.
- Analyzed performance of film cooled turbine blades and impingement cooling on gas turbine leading edges by experimental, analytical, and computational means. (Thesis work) Assisted in testing and evaluation of guidance and control systems used in the Apollo and Space Shuttle programs. (Co-op engineering job)

Educator

- Instructor of both traditional students and adult learners. Classes taught included Basic Math, Beginning & Intermediate Algebra, and Technical Math I & II courses.
- Fulfilled requirements to obtain Ohio license to teach Adolescent Young Adult (Grades 7 – 12) mathematics.
- Advised and guided users on computer code operation and the interpretation of analysis results.
- Trained members of newly formed Computational Fluid Mechanics in basic fluid mechanics, CFD methods, and computer programming.
- Advisor to graduate students in fluid mechanics and engineering
- Graduate instructor for aero propulsion laboratory

Computer Programmer

- Authored PCSTAGE, a blade-to-blade turbomachinery flow analysis code; and STGGRF, a companion graphics post processing computer code. PCSTAGE has over 50 users distributed between government, university, and industry.
- Maintained and modified legacy flow analysis computer programs written in the 60's, 70's and 80's, which are still in use by government and industry.

WORK HISTORY

- University of Tennessee, Chattanooga
 - SimCenter, Research Professor, 2008-present
- Cuyahoga Community College – Metro Campus, Cleveland, Ohio
 - Math Department, Adjunct Faculty 2005-present
- NASA Glenn Research Center, Cleveland, Ohio 1976-2004
 - Compressor Branch 1996-2004
 - Turbomachinery Flow Physics Branch 1991-1996
 - Computational Methods Branch 1985-1991
 - Computational Fluid Mechanics Branch 1978-1985
 - Turbine Branch 1976-1978
- University of Cincinnati, Cincinnati, Ohio (Graduate School) 1972-1976
- NASA Johnson Space Center, Houston, Texas (Co-op Engineering Program) 1967-1972

EDUCATION

- Integrated Math Certification AYA, G7-12, Baldwin-Wallace College, OH – 2005
- Ph.D., Aerospace Engineering, University of Cincinnati, OH -1976
- M.Sc., Aerospace Engineering, University of Cincinnati, OH -1974
- B.Sc., Aerospace Engineering, University of Cincinnati, OH -1972

Publications

1. “On Flow Periodicity in the NASA Transonic Flutter Cascade,” with Lepicovsky, Chima, Wood, *Journal of Turbomachinery*, 2001.
2. “Use of Preliminary Design Methods in the Analysis of Multi-Stage Turbomachinery,” NASA CP 3282, Vol. 2, 1994.
3. “An Integral Equation Solution for Multistage Turbomachinery Design Calculations,” ASME paper 93GT-41, 1993.
4. “Wind Tunnel Turning Vanes of Modern Design,” with Gelder, Moore, and Sanz, AIAA paper 86-0044, 1986.
5. “Design and Performance of a Fixed, Nonaccelerating Guide Vane Cascade That Operates Over an Inlet Flow Angle Range of 60 Degrees,” with Sanz, Sanger, Gelder, and Cavicchi, *Journal of Engineering for Gas Turbines and Power*, April 1985.
6. “A Rapid Blade-to-Blade Solution for Use in Turbomachinery Design.” *Journal of Engineering for Gas Turbines and Power*, April 1984.
7. “Solution of Plane Cascade Flow Using Improved Surface Singularity Methods,” *Journal of Engineering for Power*, July 1982.
8. “Plane Cascade Solution with Injection,” with Hamed and Tabakoff, *Journal of Energy*, May-June 1978

NASA Awards

- Technical Brief Awards (1983, 1986, 1997)
- Special Act Awards (1983, 1989, 1998, 2000, 2002)
- Group Achievement Awards (1984, 1990, 1999, 2001, 2002, 2003, 2004)