Matthew D. O'Connell

CONTACT INFORMATION

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BRIEF

- 2013, Pathways IEP at NASA Langley Research Center.
- 2011, Master's in Computational Engineering University of Tennessee at Chattanooga. GPA 4.0.
- 2011, Began PhD in Computational Engineering at the University of Tennessee at Chattanooga SimCenter: National Center for Computational Engineering.
- Anticipated Graduation: May 2015.
- Research Interests: mesh generation, mesh optimization, feature based mesh adaptation, elliptic smoothing on unstructured meshes, mesh generation for massively parallel architectures, polyhedral mesh generation

EDUCATION

University of Tennessee at Chattanooga, Chattanooga, Tennessee USA

Ph.D. in Computational Engineering, expected May 2015

M.S. in Computational Engineering, August 2011

Austin Peay State University, Clarksville, Tennessee USA

B.S., Physics, May, 2009

CONFERENCE PRESENTATIONS

O'Connell, Matthew D. and Karman, Steve L. "Techniques for Unstructured Mesh Adaptation with Elliptic Smoothing". 50^{th} *American Institute of Aeronautics and Astronautics* Aerospace Sciences Meeting.

O'Connell, Matthew D. and Karman, Steve L. "Mesh Rupturing: A Technique for Significant Mesh Movement". 51^{st} *American Institute of Aeronautics and Astronautics* Aerospace Sciences Meeting.

SELECTED COURSES

- Grid Generation
- Adaptive and Dynamic Grid Generation
- Parallel Scientific Supercomputing
- Computational Fluid Dynamics
- Viscous Flow Theory
- Viscous Flow Computation
- Computational Structural Dynamics
- Computational Design
- Numerical Solutions of Partial Differential Equations
- Numerical Analysis

ACADEMIC AND RESEARCH EXPERIENCE

University of Tennessee at Chattanooga SimCenter
Graduate Student with Steve Karman **August, 2009 - present**
Includes current Ph.D. research, Ph.D. and Masters level coursework and research/consulting projects. Current research includes three dimensional Winslow / elliptic unstructured mesh smoothing under Dr. Steve Karman. Past research included two dimensional Winslow / elliptic smoothing and feature based mesh adaptation. Course work included: implementing two and three dimensional unstructured CFD codes, structural response codes, distributed and shared memory parallelization of numerical algorithms, mesh generation and smoothing, and coupling mesh and CFD codes to implement Adjoint and gradient based geometry design optimization.

NASA Real World in World
Evaluator **February - April, 2011**
Evaluate student design of James Webb Space Telescope. Work with student teams to clarify and justify their designs for a deployable sunshield and mirror assembly.

Austin Peay State University
Mentor for Governor's School for Computational Physics **June - July, 2008 & 2009**

- Lead mentor - managed schedules and activities in and outside the classroom of other mentors.
- Teaching assistant - shared administrative responsibilities with faculty instructor, fielding student inquiries, holding bi-weekly recitation sessions, small group and one-on-one tutoring, teaching computational and experimental labs, developed projects and exams.

Austin Peay State University
Teaching Assistant: Astronomy 1010 Lab **May - July, 2007**
Maintain lab equipment, field student inquiries, grade lab reports.

Austin Peay State University
Tutor: Department of Physics **May - July, 2007**
Teach weekly recitation sessions for freshman Physics Majors in Calculus and Calculus based Physics courses.

Technical Experience

- Recent Regular Use: C/ C++, MPI, Octave, Matlab
- Past Regular Use: Fortran 90, Python, OpenMP, POSIX Threads,
- Familiar: OpenCL, Qt, Java, Fortran 77, PHP
- Applications: Mathematica, VisIt, Paraview, XCode, Netbeans, common spreadsheet and presentation software.
- Operating Systems: Unix/ Linux, OS X, Windows

Honors and Awards

Austin Peay State Univeristy: graduated Magna Cum Laude, in Physics, Sigma Pi Sigma, 2009
Robert Sears Award, Dedication to Science 2009
National Space Grant Recipient 2007