**Veera Manek**491 Lynch Ave NW, Atlanta, GA 30318 **🖂** *veera@gatech.edu***🕿** (814)-954-2115

***Summary***

Graduate student specializing in Fluid Dynamics, Turbulence, Combustion, Large Eddy Simulation (LES) and Acoustics with 4 years of experience in CFD modeling, meshing, simulation & visualization

***Education***

**Georgia Institute of Technology, Atlanta GPA: 4.0 / 4.0** Aug 2014 - Present

PhD in Mechanical Engineering

**Georgia Institute of Technology, Atlanta GPA: 3.7 / 4.0** Aug 2012 - Apr 2014

Masters in Aerospace Engineering

**Pennsylvania State University GPA: 3.5 / 4.0** Aug 2010 - Jul 2012

Research Assistant in Aerospace Engineering

**National Institute of Technology, Nagpur GPA: 7.4 / 10.0** Jun 2006 - Jun 2010

Bachelor of Technology in Mechanical Engineering

***Skills***

* **Design Simulation Softwares :** ICEM-CFD, Gambit, FLUENT, Aspen-Plus, Actran-FFT, Gridgen
* **Computer Languages:** FORTRAN-95,90,77, MATLAB, PYTHON, C
* **Software Packages:** Paraview, Fieldview, Tecplot, Xmgrace, Gnuplot
* **Documentation and Formatting:** LaTeX, Sphinx, html, xml, MS Office

 ***Work Experience***

**Research Assistant – GT Cryogenics Lab, Georgia Tech** *Aug 20 14 –Present*

*Advisor: Dr. S.M. Ghiaasiaan, School of Mechanical Engineering, Georgia Tech*

* Collaborated with Chart Inc. engineers to synthesize the prototypical fuel delivery systems which have applications in LNG fuel industry.
* Performed rigorous simulation to build a model for removal of carbon dioxide from pipeline natural gas at “cryogenic” temperatures using distillation theory techniques
* Analysis of solid freeze out temperature of carbon dioxide required for cryogenic system design to avoid plugged equipment and other operating problems
* Optimization of simulation for higher efficiencies and to meet goal of commercially serviceable natural gas

**Research Assistant – Computational Combustion Lab, Georgia Tech** *Aug 20 12 –Apr 2014*

*Advisor: Dr. Suresh Menon, Hightower Professor, School of Aerospace Engineering, Georgia Tech*

* Developed a reduced basis model for a multi-injector liquid propellant rocket engine, and established a computational setup for turbulent combustion using LES combustion simulations
* Developed and implemented impedance boundary conditions to recreate the combustion dynamics of inlet pipes for coaxial propellant injection directly at the faceplate plane of the chamber
* Performed LES combustion for a turbulent lean premixed methane slot burner; Analyzed the effect of numerical schemes and subgrid closure models of the slot burner on the flame dynamics and flame-turbulence interactions
* Critiqued and consolidated LES closure models for a wide range of combustion regimes in premixed combustion

**Research Assistant – Computational Aeroacoustics Lab, Penn State Univ**   *Aug 2010 - Aug 2012*

*Advisor: Dr. P. J. Morris, Professor, Department of Aerospace Engineering, Penn State Univ*

* Developed a working code for Dispersion Relation Preserving (DRP) waves and implemented a sixth order numerical scheme for the Navier-Stokes equations coupled with DRP waves
* Incorporated a finite difference scheme to have the same wave modes, propagation characteristics and wave speeds for the governing equations and the DRP system by optimizing the finite difference scheme in wavenumber and frequency space
* Incorporated different boundary conditions and investigated their effects on the DRP wave propagation and artificial viscous dissipation

**Summer Research Fellow – Indian Institute of Technology, Kanpur (IIT-K)** *May 2009 - Aug 2009*

*Advisor: Dr. S. Mittal, Professor and Head of Deptartment, Aerospace Engineering, IIT-Kanpur*

* Studied the effect of the number of design variables on the shape optimization process using a continuous adjoint approach on an airfoil
* Explored the effect of volume constraints on the lift and drag coefficients of the optimized airfoil shape
* Achieved multipoint optimization for two or more objective functions in the design space to obtain optimal aerodynamic design of an airfoil

**Summer Intern – JNCASR, Bangalore, India**  *May 2008 - Jul 2008*

*Advisor: Dr. S. M. Deshpande, Senior Research Associate, Engineering Mechanics Unit, JNCASR*

* Performed simulations on the spectral theory of stability and explored stability characteristics of numerical schemes
* Computed flow features of potential flow solutions, assembled and analyzed data for comparison with experimental data from creeping flow applications

**Research Assistant – National Institute of Technology (NIT Nagpur)** *Aug 2009 - May 2010*

*Advisor: Dr. A. Dhoble, Professor, Mechanical Engineering, NIT Nagpur*

* Analyzed the acoustics of automobiles in collaboration with Maruti Suzuki India Ltd
* Diagnosed faulty parts by assembling a database for the noise deviation by performing a FFT of the noise recordings in real time

**Intern - Dumdum Metalloy Industries Pvt. Ltd, Kolkata** *Nov 2007 - Dec 2007*

*Mentor: Nishant Sharma, Process and Tools Director, Kolkata*

* Gained foundry shop floor experience in pattern and die design, moulding, casting (centrifugal, permanent mould and sand), identification of different copper base alloys and test piece testing, design office, production and planning, CNC machining, quality control, welding and painting

**Academic Projects**

* Linear Stability Analysis using Orr-Sommerfeld approach for a laminar incompressible flow over a flat plate boundary layer, under *Prof. D. Webster, Civil and Environmental Engineering, Georgia Inst. Of Tech, Spring 2014*
* Studied the structure of methane-air flames and the effect of steam dilution on laminar flame speed and flame thickness, under *Prof. T. Lieuwen, Aerospace Engineering, Georgia Inst. Of Tech, Spring 2013*
* Performed CFD simulation of turbulent flows around struts with different superimposition, analysis of cross flow turbulence dynamics and validation with experimental data, under *Prof. C. Camci*, *Aerospace Engineering, Penn State Univ, Fall 2010*
* Performed numerical simulation of Coanda Effect VTOL UAV and analyzed the entrainment of ambient fluid features for different separation between Coanda surface and the duct boundary, under *Prof. C. Camci*, *Aerospace Engineering, Penn State Univ, Fall 2010*
* Project and seminar on Aerodynamics of Race Cars under *Prof. N.V. Deshpande, Mechanical Engineering Department, NIT Nagpur, Nov 2008*
* Developed a working model of a solar drier and explored the efficiencies that could be achieved by varying environmental conditions and design, under *Prof. N.V. Deshpande, Mechanical Engineering Department, NIT Nagpur, Nov 2008*

***Awards and Honors***

* **Indian National Academy of Engineering (INAE) Fellowship**  *2008-2009*

 Participated amongst the top 30 students selected in India for the prestigious INAE scholarship

* **Indian Academy of Sciences Fellowship** *2008-2009*
* **Summer Research Fellowship, JNCASR, Bangalore, India** *2007-2008*

***Publications***

* **V. Manek**, D. N. Srinath, and S. Mittal. “A study of the effect of the number of design parameters on the airfoil shape optimization process.” 11th Annual CFD Symposium of the Aeronautical Society of India, August 2009, Bangalore, India
* D. N. Srinath, S. Mittal, and **V. Manek**. “Multi-point shape optimization of airfoils at low Reynolds numbers.” Computer Modeling in Engineering and Sciences (CMES) 51.2 (2009): 169.