134 Plymouth Lane
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Casey Thomas

Objective: To learn new things and improve my skills in the fields of aerospace and mechanical engineering by working in an experienced professional atmosphere. I have passed the fundamentals of engineering exam and one day I would like to earn a professional engineering license.

Education: North Carolina State University (Current GPA 3.1)
Masters of Science in Aerospace Engineering May of 2011

Coursework focused on spacecraft dynamics, attitude, and classical control theory with spacecraft applications. These topics are fundamental for orbital maneuvering, and attitude control. The projects completed in the courses were based on real world tasks, such as slewing a satellite 10 degree about its pitching axis and using observation data for orbit determination. Courses were held at the National Institute of Aerospace (NIA). NIA is a non-profit research and graduate education institute. NIA was created from a consortium of seven research universities and has a strategic partnership with NASA Langley Research Center.

The University of North Carolina at Charlotte (GPA 3.85)
Bachelor of Science
Mechanical Engineering, May 2007
Magna Cum Laude

Coursework focused on building a firm foundation in various disciplines (electrical engineering, structures, thermodynamics, fluids, materials and dynamics). All classes culminated into four design classes in which a problem was given that required in-depth knowledge in each discipline to solve. This emphasized the connection between the different disciplines and how engineering principals learned in the classroom can be applied to the real world.

Projects: **Determination of Aerodynamic Coefficients during Hypersonic Flight (Thesis)**
Conducted reconstructions of Phoenix and Mars Exploration Rover (MER) entry trajectories and a comparison of the observed aerodynamic coefficients from flight data and preflight aerodynamic data bases. The reconstruction started with unfiltered inertial measurement unit (IMU) data, and the data was transformed to the Mars centered inertial frame, where the data was filtered and the equations of motion were integrated.

Atmospheric Research
Developed methods for analyzing and modeling of gravity waves in the Martian thermosphere for aerobraking operations. The density data determined from Mars Reconnaissance Orbiter and Mars Odyssey aerobraking missions was used to create a power spectral density model for several latitude bands. Then the bands were normalized and compared. From the comparison a model is being developed for future aerobraking operations. Currently in progress.

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Senior Design (Team Leader)

Led a team that designed a device that measures lift and drag forces in a wind tunnel. This unit was designed to replace an outdated unit and was equipped with a mass on a chain driven by an electric motor, which was moved to cancel out the weight of the object so a more accurate lift force can be determined.

Jr. Design (Team Leader)

Led a team to design and construct a remote control fork lift that successfully maneuvered through an obstacle course and lifted three boxes, weighing between three and five pounds. The emphasis was on the weight of the fork lift, as a lighter weight yielded a longer battery life, and a shorter time for the run.

Thermal/Fluid Design

Worked with a team to design a heat exchanger for a refrigerated warehouse. Special emphasis was placed on the fin type to gain a competitive advantage. The requirements were that an allotment of thermal energy must be removed from the structure; with a reasonable defrost cycle time. An additional objective was to do this as cost effectively as possible.

Work Experience: Fall 2008-Spring 2011   National Institute of Aerospace/ North Carolina State University

Graduate Research Assistant

Conducted research under the direction of Dr. Robert Tolson at NASA Langley Research Center/NIA consisting of creating an aerodynamic database of all 70 degree half cone blunt bodied NASA spacecraft sent to Mars. Developing a method for modeling gravity waves in the Martian thermosphere for aerobraking operations and hypersonic static aerodynamic coefficient comparisons between the observed and predicted Phoenix and MER entry trajectories.

Fall 2006-Spring 2007   The University of North Carolina at Charlotte

Teacher's Assistant

Managed fluids grade book, graded weekly homework assignments, quizzes and assisted students with additional help when needed.

Computer Programs: Windows and UNIX operating systems, PRO/Engineer Wildfire, MathCad, Matlab, Microsoft Office applications, Labview and Abaqus.

Technical Skills: Machining experience lathe and mill.

Prof. Membership: Student Member of AIAA (American Institute of Aeronautics and Astronautics)

License: Engineer in training

Interests: Robotics, space exploration, long distance running and improving things.

References: Available upon request.