

Thomas T. Rice
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PROFILE SUMMARY

Experimental fluid dynamicist, field test engineer, and PhD student at Rensselaer Polytechnic Institute. Significant experience in wind tunnel testing, field testing, engineering design, and operations. Interested in applying current expertise in research and testing in an industry setting.

EDUCATION

PhD in Aeronautical Engineering – Rensselaer Polytechnic Institute (RPI) – GPA: 3.71	2014-2019
BS in Aerospace Engineering – Syracuse University – Summa Cum Laude – GPA: 3.89	2010-2014

TECHNICAL SKILLS

Research: Testing and verification, wind tunnel experimentation, data acquisition and analysis, SPIV, flow visualization.

Software: Matlab, LabView, NX, PTC Creo, STK, FreeFlyer, Latex, Word/Excel/PowerPoint, Ansys (CFD), RefProp.

General: Additive manufacturing, MSC Simufact, proficiency with various lab tools, grant proposal/academic writing, oral presentations and design reviews, leadership and communication training, Lean Six Sigma.

RELEVANT EXPERIENCE

Graduate Research Assistant – Center for Flow Physics and Control – RPI – Troy, NY	2014-Present
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Experimental aerodynamicist and PhD student under Michael Amitay. Investigated the use of active flow control on rotational systems to increase performance and reduce fatigue caused by dynamic stall and reverse flow.

- Among the first groups to experimentally test, measure, and validate the use of synthetic jets on a wind turbine in a closed loop field test setting.
- Showed 50% sectional drag reduction during reverse flow conditions on helicopter blades, and massive reduction of dynamic stall loads on wind turbine and helicopter blades.
- Member of multiple research centers, including the Center for Mobility with Vertical Lift (MOVE).
- Significant experience in wind tunnel experiment design and testing, using PIV, load, surface pressure measurements, and various flow visualization techniques.
- Analyzed aerodynamics of flow separation, interaction of flow control devices with separated flowfields, fluid-structure interaction, deformable airfoil surfaces, and verified various aerodynamic models.
- Conducted wind tunnel testing on a Boeing vertical tail model to improve rudder performance and validate CFD models on commercial aircraft.

Engines Intern – Blue Origin – Seattle, WA	Fall 2017
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Design engineer in the Turbomachinery and Mechanisms team. Designed and analyzed turbomachinery components within the BE-4 Powerpack.

- Utilized PTC Creo to develop a technology demonstrator using additive manufacturing which was the first of its kind at Blue Origin.
- Conducted trade study and multiple design iterations based on significant thermal, structural, and fluidic analyses.
- Conducted a successful preliminary design review with the Turbomachinery and Mechanisms team, highlighting oral presentation and communication skills.

Flight Dynamics Analysis Intern – a.i Solutions – NASA Goddard – Greenbelt, MD	Summer 2014
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Analyst with the Earth Observing System using orbital dynamics tools such as FreeFlyer and STK, and other tools such as MATLAB and Excel to analyze parameters for three Earth observing satellites (Aqua, Aura, and Terra).

- Ran weeklong predictions based on predicted satellite drag and other various parameters.
 - Analyzed satellite drag to determine proper usage of drag coefficient and various drag models to improve accuracy.
 - Analyzed various de-orbiting and decommissioning plans of the NASA Terra satellite, and how they affect potential debris propagations.
 - Conducted lifetime analyses for different fuel usage plans to optimize science collection.
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Undergraduate Student Researcher – Green Fluids Lab – Syracuse University – Syracuse, NY **2013-2014**
Researcher at the Syracuse Center of Excellence studying underwater biological propulsion.

- Analyzed experimental PIV data and conducted underwater flow visualization photography from a water channel experiments to study the fluid physics and dynamics of underwater propulsion.
- Gained significant experience manipulating and presenting large data structures and creating professional presentations.
- Designed significant hardware and software improvements to an existing tow tank for flow visualization experiments.

Engineering Intern – GE Energy Management – Fort Edward, NY **Summer 2013**
Implemented Lean Six Sigma methodology to improve plant processes, designed and prototyped machine improvements, improved operator safety, contacted external suppliers and manufacturers, optimized processes, and achieved overall operational cost reduction and safety protocol improvement.

Orbital Dynamics/VIPER Telescope Intern – Siena College – Loudonville, NY **Summer 2012**
Worked among a team of three engineering students at Siena College to refurbish a large radio telescope from the Antarctic, and aid in CubeSat mission planning. Introduction to refurbishment process, signal processing, and orbital dynamics. Familiarization and training in STK (Systems Tool Kit) to analyze CubeSats, and a corresponding expert certification exam.

LEADERSHIP EXPERIENCE

Lead Instructional Assistant – RPI – Troy, NY **August 2018**
Head TA for Summer@Rensselaer camp, where high school students get introduced to the aerospace program at RPI. Conducted wind tunnel tests, managed four teaching assistant roles, budgeted RC airplane purchases.

Graduate Teaching Assistant – RPI – Troy, NY **Fall 2014, Spring 2018**
Teaching assistant for Fluid Dynamics Lab, an experimental research oriented lab using a subsonic wind tunnel. Lectured, discussed results, and monitored for lab safety. Conducted over 50 office hours and graded weekly assignments.

Undergraduate Teaching Assistant – Syracuse University – Syracuse, NY **Fall 2014**
Lead weekly recitations where students use knowledge from lecture to solve additional problems, held weekly office hours, and graded assignments and exams.

Academic Excellence Workshop Facilitator – Syracuse University – Syracuse, NY **2011-2014**
Lead weekly workshops consisting of 6-10 students for help in critical engineering courses. Importance placed on teamwork and mastery rather than memory. Frequent leadership training where emphasis is focused on teamwork.

HONORS AND AWARDS

Outstanding Achievement Award in Aerospace Engineering – Top of major class **2014**
Ross Evan-Iwanowski Memorial Award for Outstanding Aerospace Junior **2013**

SELECT PUBLICATIONS

Rice, T., Taylor, K., & Amitay, M. (2018). Wind Tunnel Quantification of Dynamic Stall on an S817 Airfoil and its Control Using Synthetic Jet Actuators. *Wind Energy*. DOI:10.1002/we.2266.

Rice, T., Taylor, K., & Amitay, M. (2018). Quantification of the S817 airfoil aerodynamic properties and their control using synthetic jet actuators. *Wind Energy*. DOI: 10.1002/we.2197.

Jacobellis, G., Gandhi, F., **Rice, T.,** & Amitay, M. (2018). Computational and Experimental Investigation of Camber Morphing Airfoils for Reverse Flow Drag Reduction on High-Speed Rotorcraft. In AHS 74th Annual Forum. Phoenix, AZ.

Rice, T., Taylor, K., & Amitay, M. (2017). Wind Tunnel and Field Test Results on Reducing Load Oscillations on Wind Turbine Blades using Synthetic Jets. In 35th Wind Energy Symposium, AIAA SciTech. Grapevine, TX.