Rohan Venkatesh

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ELIGIBILITY AND AVAILABILITY

U.S. Citizenship, ability to obtain and maintain a U.S. Security Clearance, willing to relocate, ability to travel

EDUCATION

Master's Degree in Aerospace Engineering, RPI - Troy, NY **May 2017**
GPA 3.19

Bachelor's Degree in Aerospace and Mechanical Engineering, RPI - Troy, NY **May 2016**
- Minor in Economics GPA 3.14

SKILLS

Air Vehicle Dynamics, Propulsion Systems, Aerodynamics, Statistics, Flight Dynamics and Control Theory, Process Development, Modeling and Simulation (M&S), FEA Package (Nastran, ANSYS, Abaqus), Documentation, Linux, LABVIEW, Programming in MATLAB, Python, and C language, Multi-Disciplinary Optimization (MDO), 3D CAD Modeling Software (Solidworks, UG CAD/NX software suite), CFD Software and Pre/Post-Processing tools (Hypermesh, Pointwise, AcuSolve, and FUN3D), Minitab, MS Office (Excel, PowerPoint, Word, etc.)

PROFESSIONAL EXPERIENCE

Bihrle Applied Research **July 2017 - June 2018**

● Generated mesh models in Pointwise for aircraft parts and ran through CFD solvers such as FUN3D to validate the accuracy of numerical methods and turbulence models against existing experimental data. The objective was to determine the aerodynamic and stall effects of adding a radome to the Boeing 737-600 fuselage.
● Digitized F-16 flight test curves to collect and analyze performance data functions and validated flight dynamics models used in simulators for European Participating Air Forces (EPAF), updating documentation of emergency database and vehicle contingency procedures
● Crafted a research paper on Shape Memory Alloy (SMA) actuation mechanisms and their use in airfoil morphing to determine their viability in Compact Aerial Refueling Boom Systems (CARBS)
● Prototyped "trim algorithm" in C to include optimized search for a stable solution instead of an exhaustive search
● Trained on "Presenting Data and Information" by Edward Tufte, PhD. for concise presentation of information as well as effective data visualization.

Master's project under Prof. Assad Oberai, PhD **September 2016 – May 2017**

● Linearized the Navier-Stokes equations to perform heat transfer analysis and analyze the Stefan phase change problem, extending the same principles to an advection-diffusion stagnant water evaporation
● Formulated applicable PDEs and modeled the boundary and phase change interface jump conditions

Research at RPI under Prof. Jason Hicken, PhD **June 2015 – July 2015**

● Ported and debugged Newton iterative aircraft wing optimization code from MATLAB to Python in PyCharm integrated environment using Numpy, SciPy and MatPlotlib packages to optimize swept aircraft wings for fuel efficiency with respect to angle of attack and twist by solving the coupled aerodynamic and structural components.
● Formulated Chebyshev panel lift distributions in Python and compared it against that of equivalent panels.

USRG Program at Texas A&M University under Prof. Edward White, PhD **June 2014 – August 2014**

● Read, analyzed, and interpreted professional journals in order to statically model and produce regressions of subscale oil rig data at the Oran W. Nicks Low Speed Wind Tunnel, extrapolating predicted responses
● Performed analysis of variance (ANOVA) to reduce data collection cost, testing time, and resources

PROJECTS AND COURSEWORK

● **Design Optimization:** Implemented advanced computational techniques in MATLAB to design and develop constrained multidisciplinary deterministic and stochastic processes using estimation theory and surrogate modeling for applications. Implemented Projects: Aircraft Wing Spar Thickness for Maximized Lift, Heat Exchanger Wall Thickness for Heat Flux Maximization, and Theme Park Rotating Cup Placement for Maximized Unpredictability; accompanied each project with peer-reviewed written reports and full documentation

● **Numerical Computing and Computational Linear Algebra:** Computational reliability analysis, MATLAB programming, iterative methods including Newton's Method, least squares regression, numerical integration, eigenvalue and eigenvector problems, QR factorization, solving large sparse matrix equation using steepest descent method, maximizing image compression with acceptable image quality loss, Singular Value Decomposition (SVD) to separate and classify data, applying multi-variable regression to separate clobbered images using Independent Component Analysis (ICA) and Principal Component Analysis (PCA)

● **Computational Fluid Dynamics and Finite Elements:** Numerical approach to Navier-Stokes Equations, turbulence modeling, Altair AcuSolve simulations, NX NASTRAN meshing and solving, finite element models; Course project estimating the flutter speed of a NACA 0012 airfoil using the Spalart-Allmaras (SA) turbulence model and validating it against well-known analytical model.

● **Embedded Systems:** Programmed C8051 microcontroller in C to implement PID methods in an accelerometer for speed control, ultrasonic ranger for collision avoidance, and compass for navigation on a painted lane; wired circuitry to operate a subscale autonomous car, building guidance navigation and control integrated software and hardware

● **Air Vehicle Design:** High level aircraft design modification project refining F-35 flight dynamics model to implement long range models with VTOL, consolidating technical knowledge and enhancing organizational skill working with a team

Aerospace Structures, Aero-elasticity and Structural Dynamics: Structural and vibrational aspects of aircraft and spacecraft, analytically and numerically analyzed beam deformation of slender and composite materials. Aero-structures project included estimating the stress on fixed wings bearing dual engine using Abaqus FEA software

● **Modeling and Control of Dynamic Systems:** Linear control systems using Laplace transforms to solve mechanical and electrical applications of differential equations, feedback loops, frequency response, state estimation, Bode plots, and root locus

● **Modeling and Analysis of Uncertainty:** Probability & Statistics, Data analysis, Model validation, Uncertainty quantification, error propagation & analysis, quality management and control

● **Aerodynamics:** Inviscid, incompressible flows, lifting line theory, thin airfoil theory, normal and oblique shocks, vortex lattice methods, wave drag, induced drag

● **Flight Mechanics:** Flight dynamics, aircraft performance stability and control, disturbance theory, avionics

● **Fluid Mechanics, Compressible Flow and Turbulence:** Derivation of the Navier-Stokes equations using vector calculus, as well as numerical solutions to time averaged and fluctuating subsonic and supersonic flows using large and small eddy length and time scales

● **Material Science and Strength of Materials:** Physical and chemical properties of materials, lattice structures, stress and strain, composites and alloys, equilibrium and constitutive laws

● **Mechanical Design and Mechanical Systems Lab:** Stress and Failure, Mechanical Testing, S-N Curves, Fatigue and fracture mechanics, Crack propagation and Mechanical Systems, Geometric Dimensioning and Tolerancing (GD&T)

● **Electronic Instrumentation:** Circuits, op-amps and diodes, transistors, signal response and noise

● **Managerial and Macroeconomics:** Business cost analysis and data collection, production functions, risk integration, economic policy analysis

AWARDS AND HONORS

● Dean's List: Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Fall 2015

ORGANIZATIONS

● American Institute of Aeronautics and Astronautics (AIAA) **June 2016-present**

● Order of the Engineer **April 2016-present**

LANGUAGES

English (native), Kannada (fluent), French and Hindi (working knowledge)