Frederick "Ricky" Beamer

Systems Engineer

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Systems Engineer trained in Aerospace and Mechanical Engineering with an extensive computer science background. Over 10 years of experience in analyzing complex systems focusing on safety and mission critical human space flight software. Additional expertise in research, design, and execution of dynamic test cases for spacecraft flight software utilizing advanced simulation software packages.

AREAS OF EXPERTISE

System & Software Assurance | Python | C++ | Software Safety | Software Testing
Safety & Mission Assurance | Visual Basic | MATLAB | Linux | Photography
Software Quality | Raspberry Pi | IP Networking | MS Windows | Microsoft Office | Rocketry

PROFESSIONAL EXPERIENCE

Systems Engineer SME

05/2012 – Present

KLS Government Services, LLC | New-Bold Enterprises, Inc.

Duties/Responsibilities

- Contracted to NASA's Independent Verification and Validation (IV&V) program focusing on safety and mission critical human spaceflight software
- Research, design, and execute dynamic test cases for spacecraft flight and ground software utilizing advanced simulation software packages
- Transitioned to the IV&V Artemis Test Team in Spring 2020
- Testing focused on examining critical functions necessary across Orion, Space Launch System (SLS), and Exploration Ground System (EGS) programs in support of planned Artemis missions
- Testing focus includes:
  - Ascent guidance targeting
  - Ascent abort scenarios
  - Earth Orbit Operations and Orion Vehicle Checkout
  - Service Module Fairing failures and recovery operations
- Previously the IV&V Orion dynamic testing team lead from Fall 2013 until Spring 2020
- Evaluated software requirements from definition through implementation and testing. Domain experience in:
  - Timeline and Vehicle Management (TVM)
  - Environmental Control and Life Support (ECLS)
  - Guidance, Navigation, Control, and Propulsion (GNCP)
- Analyzed software developed under Agile and Waterfall software development models
- Mentored four year-long interns with projects involving the full lifecycle dynamic test process including test case proposal, script development, run-for-record testing, and closeout reports and determining the fidelity of the models utilized within the testing simulation environment
- Mentored several summer college and high school interns. Responsible for ensuring interns become familiar with the available testing environments, conduct tests following the proper procedures, and confirming that the results generated are appropriate for current and future analysis and planning. Projects involved:
  - Dynamic testing environment setup and configuration
  - Creation of custom analysis tools for use by other IV&V Orion system engineers and IV&V personnel
  - Comparing software development test environments to certified testing environments
  - Development of test cases to recreate flight scenarios investigating inflight anomalies

Graduate Teaching Assistant, Aircraft Health Management Class

08/2011 - 12/2011

West Virginia University

Duties/Responsibilities

- Assisted the professor and students during laboratory experiments by providing guidance in experiment design and analysis
- Introduced perspective high school and freshmen engineering students to aircraft simulators and the aircraft health management class through interactive information sessions
- Oversaw the operation of the 6 degree-of-freedom flight simulator and PC based simulators

Graduate Research Assistant

01/2010 - 08/2011

West Virginia University

Duties/Responsibilities

- Contributed to the development of an undergraduate and graduate level course in Aircraft Health Management
- Developed new aircraft models and retrofitted / upgraded existing models within MATLAB and Simulink
- Managed the software upgrade from MATLAB 6.5 to MATLAB 2011a (version 7.12) including updating and evaluating the specific software packages used for the Aircraft Health Management courses
- Supervised the operation of the 6 degree-of-freedom flight simulator and PC based simulators

COMPUTER EXPERIENCE

Languages	Software	OS Platforms	Development Models	Development Hardware
• Python • C++ • XML • MATLAB • Simulink • Excel VBA • Bash • Windows Batch	• IBM Rational DOORS • IBM Rational Rhapsody • SciTools Understand • Spyder IDE • MS Office • MS Visio • LibreOffice • FreeCAD	• MS Windows 10/11 • Fedora • CentOS • Rocky Linux • Ubuntu • Arch • macOS	• Agile • Scrum • Kanban • Waterfall	• Raspberry Pi • Arduino

AWARDS

- Project Achievement Award in recognition of contributions in support of Artemis I Issue Burndown (11/2021)
- Excellence in Values Award for demonstration of excellence in support of a successful virtual internship program (11/2021)
- NASA IV&V SAS Program Team Award for contributing to the growth and advancement of the future innovators, leaders, and architects of NASA's future (8/2019)
- Excellence in Values Award for teamwork in reorganizing the Orion IV&V team confluence site, resulting in the restructuring and cleanup of a tremendous amount of information that it contained, making it more useful and usable (12/2018)
- Excellence in Values Award for contributions in the implementation of A-SCAN into the Orion IV&V team (12/2018)
- Excellence in Values Award for contributions in support of the Orion IV&V Entry, Descent, and Landing (EDL) Scrum Team during the familiarization of various aspects of the Guidance, Navigation, Control, & Propulsion (GNCP) domain (6/2017)
- Excellence in Values Award in recognition of contributions in the advancements of MPCV Independent Testing (12/2014)
- Project Achievement Award in recognition of contributions to the MPCV IV&V EFT-1 test flight team (12/2014)
- Spirit of Service Award in recognition of contributions to the 2013 Combined Federal Campaign Fund Raising Event Efforts (12/2013)
- Excellence in Values Award in recognition of contributions to the MPCV Test Campaign (6/2013)
- Project Achievement Award in recognition of contributions to MPCV FSW Test Technical Team (2/2013)

CERTIFICATES & LICENSES

- NASA Safety and Mission Assurance Technical Excellence Program (STEP) Level 1 Certificate
- Engineer Intern in West Virginia, #8956
- Private Pilot, Single Engine Land
- National Association of Rocketry High Power Rocketry Certified Level 2

PROFESSIONAL ORGANIZATIONS

- National Association of Rocketry, Member Number 77933
- National Eagle Scout Association

PROFESSIONAL PRESENTATIONS

- 2014 Annual Workshop on Verification and Validation, Comparison of IV&V's Use of Non Verification Environments and Program Use of Verification Environments (Presentation, https://youtu.be/8XPagSS8Vts), Fairmont, WV
- 2013 Annual Workshop on Verification and Validation, MPCV IV&V with a Dynamic Twist (Presentation, https://youtu.be/tqK_p3VJ7no), Fairmont, WV
- 2012 Annual Workshop on Verification and Validation, IV&V Dynamic Test and Analysis of the Orion Multi-Purpose Crew Vehicle FSW (Presentation), Morgantown, WV
- 2012 Annual Workshop on Verification and Validation, IV&V Dynamic Test and Analysis with the Orion Multi-Purpose Crew Vehicle FSW (Poster), Morgantown, WV
- 2011 American Institute of Aeronautics and Astronautics Guidance, Navigation, and Control Conference, Analysis of Aircraft Multiple Engine Configurations for Fault Tolerant Control (AIAA-2011-6407)(Presentation), Portland, OR
- 2011 American Institute of Aeronautics and Astronautics Atmospheric Flight Mechanics Conference, Development of a Simulation Environment to Support Aircraft Health Management Education (AIAA-2011-6614)(Presentation), Portland, OR

PUBLICATIONS

- Perhinschi, M.G., **Beamer, F.**, 2012, Flight Simulation Environment for Undergraduate Education in Aircraft Health Management, *Computers in Education Journal*, 22 (3)

EDUCATION

Masters of Science in Aerospace Engineering
12/2011

West Virginia University

Thesis: Analysis of Aircraft Multiple Engine Configurations for Fault Tolerant Control

Bachelor of Science in Aerospace Engineering
12/2008

West Virginia University

Bachelor of Science in Mechanical Engineering
12/2008

West Virginia University