

GEORGE F. SWITZER
Aerospace Engineer • High Performance Computing Specialist
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PROFESSIONAL SUMMARY

Aerospace engineer with over three decades of experience supporting large-scale computational modeling, CFD, and high performance computing (HPC) for aerospace and atmospheric science applications at NASA Langley Research Center. Skilled in developing, validating, and automating simulation workflows on supercomputing systems, with a focus on reliability, reproducibility, and efficient use of HPC resources. Experienced in low-speed Navier–Stokes analysis, large scientific datasets, and technical collaboration with multidisciplinary engineering and research teams. Seeking to apply this background to CFD engineering and survivability analysis in demanding aerospace and defense environments.

TECHNICAL SKILLS

Programming & Tools: Python, MATLAB, Fortran, Shell scripting

HPC & Simulation: FUN3D, MPI, Linux/Unix HPC systems, GPU-accelerated architectures, batch schedulers

Analysis & Visualization: PyTecplot, Tecplot, large-scale data analysis and post-processing

CFD & Modeling: Low-speed Navier–Stokes, solver validation, convergence checks, mesh quality impacts

Additional: Exposure to machine learning concepts, including data quality, validation, and appropriate use cases

PROFESSIONAL EXPERIENCE

HIGH PERFORMANCE COMPUTING FACILITATOR

NASA Langley Research Center, Hampton, VA • 40 hours/week • 03/2021–09/2025

- Served as HPC facilitator for a research directorate, advising teams on efficient use of supercomputing resources for CFD and large-scale simulations.
- Coordinated and delivered center-wide HPC and AI/ML training activities, including monthly technical sessions with internal and external speakers.
- Supported low-speed CFD analysis for the Boeing X-66 truss-braced wing configuration using FUN3D, including generation and processing of external-flow data for interagency collaboration and technical presentations.
- Developed Python/PyTecplot automation to standardize post-processing of FUN3D results, enabling consistent, reproducible analysis workflows across CPU and GPU-based systems.
- Created Python-based approaches to accelerate satellite data analysis by exploiting embarrassingly parallel workloads, significantly reducing end-to-end turnaround time for large datasets.
- Contributed to NASA's "Summer of AI" initiative and received a NASA Silver Group Achievement Award (2024) as a member of the Summer of AI Team.

RADAR ENGINEER

Analytical Mechanics Associates (Contractor to NASA), Hampton, VA • 40 hours/week • 01/2016–03/2021

- Member of NASA's High Ice Water Content (HIWC) team, applying and refining TASS Large Eddy Simulation (LES) models to support radar and atmospheric research for aviation safety.
- Implemented Python-based workflows to automate and visualize large 3D time-dependent datasets, improving post-processing efficiency on HPC systems.
- Served as Principal Investigator for a NAS supercomputing project on LES modeling for high ice water content, coordinating simulation campaigns and analysis pipelines.
- Documented datasets and delivered analysis products for industry sensor projects, ensuring outputs were organized, reproducible, and usable by partner teams.
- Improved model performance and maintained production post-processing tools used by research and partner organizations.

SENIOR/SUPPORT SCIENTIST, COMPUTER SCIENTIST

Various Organizations supporting NASA Langley • 40 hours/week • 1993–2015

- Developed, maintained, and modernized scientific computing environments, model codes, and data analysis tools for flight system studies, turbulence/wake modeling, and radar sensor evaluation.
- Produced and managed simulation-derived datasets supporting certification of turbulence detection and wake prediction systems for aviation safety.
- Provided technical support and data products for NTSB accident investigations, including American Airlines 587 and US Air 1016, using TASS-based atmospheric and wake simulations.
- Developed and automated empirical and reduced-order models based on TASS output, enabling faster scenario evaluation without rerunning full simulations.
- Mentored students and staff in applied modeling, HPC workflows, and software use for research applications.

EDUCATION

Master of Science, Aerospace Engineering

Virginia Polytechnic Institute & State University, Blacksburg, VA • 1987

Thesis: Patch Grid Solutions of the 2-D Thin-Layer Navier Stokes Equations

Bachelor of Science, Aeronautical Engineering (Cum Laude)

California Polytechnic State University, San Luis Obispo, CA • 1985

JOB-RELATED TRAINING

- Python for Scientists & Engineers (2022)
- Argonne Training for Program for Extreme Scale Computing (2022)
- Communicating with Impact (2022)
- Deep Reinforced Machine Learning (2018)
- Large Scale Visualization with ParaView (2017)
- Guide to Project Management (2001)

HONORS AND AWARDS

- NASA Silver Group Achievement Award – Summer of AI Team (2024)
- NASA Group Achievement Award – HIWC Radar Evaluation Team (2019)
- NASA Group Achievement Award – CEV Aeroscience Project Team (2009)
- AS&M Special Achievement Award (2009)
- NASA Group Achievement Award – American Airlines Flight 587 Accident Investigation Team (2004)
- NASA Group Achievement Award – AVOSS Project (2000)
- Honorary Superior Accomplishment Award (1988)

PROFESSIONAL AFFILIATIONS

- American Institute of Aeronautics and Astronautics (AIAA) - Senior Member
- Tau Beta Pi National Engineering Honor Society - Lifetime Member

References and publications available upon request.