Eric Crisp

CONTACT INFORMATION
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EDUCATION

University of Pennsylvania, Philadelphia, PA — Jan 2025 - Dec 2025
M.Sc., Data Science — GPA: 3.50
Concentration: Artificial Intelligence & Machine Learning

Pennsylvania State University, State College, PA — Aug 2015 - May 2021
M.Sc., Mechanical Engineering — GPA: 3.92
B.Sc., Aerospace Engineering — GPA: 3.46

EXPERIENCE

Lead Aerospace Engineer, Real-Time Modeling (RTM) — Apr 2022 – Nov 2024
Blue Origin, Seattle, WA

- Contributed to engineering efforts across Blue Engines, from system design of the deep throttle lunar lander engine to control law development for one of the most powerful launch vehicles in history.
- Led a small, multi-disciplined team responsible for all RTM (real-time model) activities across Blue Origin.
- Developed RTMs for use in HIL (hardware-in-the-loop), go/no-go in test support, control law development, requirements validation, and system optimization.
- Architected the RTM framework and developed source code, tooling, supporting algorithms and solvers.
- Served as project manager from RTM conception by managing scope, deliverables, and delegation.
- Effectively communicated RTM impact, value, and results to both technical and non-technical stakeholders.
- Reduced engine test manpower requirements by up to 35% with RTM, accelerating development timelines.
- Identified critical software bugs on flight HIL systems via RTM integration, increasing reliability and value.
- Presented conclusions and engineering solutions to senior leadership regarding current engine instabilities discovered through engine development.
- Successful maiden launch of New Glenn utilized the RTM throughout the engines and vehicle software kit.

Propulsion Development Engineer, Liquid Rocket Propulsion — May 2021 – Apr 2022
Firefly Aerospace, Austin, TX

- Enhanced engine test visibility with automated visualizations of the engine state relative to test sequence.
- Managed manufacturing schedules for two production engine programs, including tracking and resolving all nonconformances.
- Conducted medium-sized liquid rocket engine testing at the system and component level, including instrumentation selection, test sequencing, and developed post-processing scripts.
- Fabricated and qualified the first and second stage engine sets for Alpha vehicle maiden flights.
- Developed an automated thermal-structural design process that reduced engine production costs by 12%.
- Led clean-sheet design, development, and testing of a new lunar engine, which exceeding performance targets by 4% and successfully landed on the Moon, March 2025.

Graduate Research Assistant, Hybrid Rocket Propulsion — Jan 2020 – May 2021
High Pressure Combustion Lab, University Park, PA

- Developed a novel, efficient electrochemical decomposition method for converting safe, liquid oxidizers into hypergolic reactants for space-based propulsion systems.
- Built several small-scale qualitative and quantitative bench top experiments to develop processes, confirm literature conclusions, and develop at-scale hypotheses.
- Conducted fully automated and instrumented hybrid-rocket engine test campaigns with metal-loaded solid fuel and O_2 for combustion efficiency and propellant selection.
- Combined the electrochemical reaction mechanism with the traditional hybrid-rocket engine system to produce a mass saving decomposition system with high combustion efficiency.

Aerospace Engineer, Hypersonic Propulsion — May 2019 – Jan 2020
Air Force Research Lab, Dayton, OH

- Invented methods for generating 3D combustion fields for use in hypersonic test chambers to visualize and understand combustion phenomena in both RAM- and SCRAM-jet conditions.
- Using variable fueling and operating conditions, high performance combustion instrumentation, and in-house real-time analysis tools written in C++ combustion phenomena such as blowoff, combustion distribution, and ignition delay fields were created.

Undergraduate Research Assistant, Pulse Detonation Engines Aug 2015 – May 2019
High Pressure Combustion Lab, University Park, PA
• Conducted over 50 fundamental detonation combustion research experiments regarding sensitivity to gap, fuel, mixture composition, flame propagation, and shock visualizations.
• Developed experimental analysis tools in Python that leveraged theoretical models to estimate flame boundary, speed, temperature.
• Performed large-scale PDE (pulse detonation engine) test campaigns informed by the conclusions from various fundamental research experiments with in-house automation, instrumentation, and post-processing.

Projects

Statistical Fact Verification System Sept 2025 – Present
• Developing end-to-end fact-checking pipeline that integrates AI response generation with statistical verification using FEVER dataset and Wikipedia API for real-time evidence retrieval.
• Implementing fine-tuned transformer-based models (BERT/RoBERTa) for claim classification against standard benchmarks with confidence scoring and multi-evidence aggregation.
• Building containerized production web application using Python, FastAPI, and Streamlit hosted on AWS and version controlled with CI\CD.
• Created an NLP pipeline (spaCy, nltk, HuggingFace Transformers) for automatic factual claim detection, named entity recognition, and evidence-based verification from multiple sources.

Physics-Informed Neural Network Approach to Parameter Estimation Jul 2025 – Present
• Investigating how modified neural networks can estimate system models (parameter estimation) as a surrogate for the industry standard first-principles models to more rapidly predict system failure, remaining component life, or even sensor placement.
• Leveraging synthetic data from theoretical models (e.g., systems of equations) and adding physically constraining equations to neural network loss functions (conservation equations, "rules of thumb"), investigate whether a PINN can derive physical models from test data.
• Developing PINN architectures and supporting functionality from scratch while selectively leveraging open-source libraries including PyTorch, JAX, and CoolProp.

Machine Learning Pipeline for Food Classification and Health Scoring Jun 2025 – Jul 2025
• Built an ML pipeline to classify food items and generate health scores using supervised learning algorithms, with model optimization through GridSearchCV hyper-parameter tuning achieving 91% accuracy in test.
• Implemented comprehensive data preprocessing using Pandas for large-scale dataset manipulation, NLTK for ingredient text processing and nutritional analysis, applied normalization, imputation, and encoding for PCA, and automated visualizations in post processing with Seaborn and Matplotlib.

Technical Skills

Programming	**Software Development Frameworks**	**Tools & DevOps**
`Python, C++, MATLAB`	`TensorFlow, PyTorch, Scikit-learn`	`Docker, AWS`
`JavaScript`	`SQL, Spark, Pandas, Numpy, React, Node`	`Git, CI\CD`
Modeling	**Aerospace Analysis Tools**	**Misc. Tools**
`Solidworks, AutoCAD`	`ROCETS, Star-CCM (CFD), Ansys Fluent (FEA)`	`Microsoft Office, Jira`
`Creo`	`ThermalDesktop, Simulink, GFSSP`	`LaTex, Vizio`

Awards and Activities

Blue Origin Engines Challenge Award Jul 2022
Customer nominated for technical successes in developing the real-time modeling (RTM) capabilities.

Blue Origin Liftoff Award Jan 2023
Nominated by peers and team members for leadership, technical excellence, and having a bias for action.