NASA/MARSHALL SPACE FLIGHT CENTER

JOINT COUNSELING SESSION

SSAI
Chris Williamson, PE
Brandon Smith, SME

Advanced Mission Partners
(Wholly Owned Subsidiary of SSAI)
Jerry Newlin

May 29, 2025

Brief Company Overview and History

- Founded in 1977 by Dr. Om Bahethi and Sara Bahethi to support NASA missions
- Headquartered in Lanham, MD
- Longtime partner of NASA, providing science, engineering, and IT services

- Top Work Places 5 years running
- Technology Top Work Place 2024
- Culture Excellence Awards:
  - Work-life Flexibility
  - Compensation & Benefits

Background

COMPANY NAME:	Science Systems and Applications, Inc. (SSAI)	**ADDRESS:**	10210 Greenbelt Rd, Suite 600, Lanham, MD 20706
OWNER:	Praveen and Shilpa Bahethi	**CONTACT NAME:**	Chris Williamson
EMAIL:	chris.williamson@ssaihq.com	**YEARS IN BUSINESS:**	48
CAGE CODE:	5S009	**DUNS NUMBER:**	087694808
WEB SITE:	www.ssaihq.com	**NAICS CODES:**	541715, 541330, 541511, 541512, 541513, 541519, 541611,541620, 541690, 541990

Business Size & Classifications

TOTAL EMPLOYEES:	**~512**
AVERAGE SALES:	$150M

CLASSIFICATIONS (select from list below):	Yes/No
SMALL BUSINESS	Yes
SMALL DISADVANTAGED BUSINESS	No
NATIVE AMERICAN-OWNED	No
ALASKAN NATIVE CORPORATION	No
WOMEN OWNED	Yes
ECONOMICALLY DISADVANTAGED WOMEN OWNED	No
VETERAN-OWNED	No
SERVICE DISABLED VETERAN OWNED	No
HUBZONE CERTIFIED	No
8(A) CERTIFIED	No
8(A) EXPIRATION DATE (if applicable)	N/A

Quality Systems

- ISO 9001: 2015 Certified
- CMMI Level 3 Development Appraised
- CMMC 2.0 Self-evaluated
- AS 9100 Compliant

Marshall Missions and SSAI Skills

MSFC Mission	SSAI Capabilities
Artemis	Space Flight Electronics Hardware Manufacturing, Electrical Electronic Parts Processing, Systems Engineering, AI/ML, Data Analytics/Science/Assimilation, Calibration and Validation (Cal/Val), Planetary Science
Space Launch Systems	Systems integration and verification, AI/ML, Simulation and modeling, real-time data visulation tools, Calibration and Validation (Cal/Val), Mars Weather prediction
Human Launch Systems	Systems integration and verification, AI/ML, Simulation and modeling, real-time data visulation tools, Environmental Modeling, Digital Twins, AI/ML
IXPE	Cal/Val, Data Visualization, Data System Maintenance, AI/ML, ITAR, Cybersecurity
Chandra	Cal/Val, Data System Maintenance, Software development, Scientific Research and Development, Data Visualization
Planetary Mission Program Office	Program Management, Planetary Science, Engineering, Data Systems Modeling and Analysis, Data Visualization
Hinode	Cal/Val, Data Systems modeling and analysis, Data Visualization, Heliophysics, ITAR, cybersecurity
ISS	Earth Science Support, Instrument Support, data analysis and scientific research

Skills & Processes

Engineering

- Systems Engineering/Requirements Development/Verification and Validation
- Avionics Systems Design, Software Engineering (CMMI Level 3 Appraised)
- FPGA Design
- Electrical/Electronic and Electromechanical (EEE) Parts Processing
- System Integration and Testing
- Manufacturing Engineering
- Workmanship certification to ANSI/IPC-J-STD-001F and Space Addendum
- IPC-610 Inspection Standard and IPC-7711/7721 rework and repair standard; Certified to AS 9100 and ITAR Registered
- ANSI S20.20 with ESD control procedures

Missions Supported

- Ocean Color Instrument (OCI) / PACE Mission
- Roman Space Telescope (RST)
- Wide Field Infrared Survey Telescope (WFIRST)
- Lucy Mission (L'Ralph Instrument)
- Capture, Containment and Return System (CCRS) / Mars Sample Return (MSR)
- Space Network (SN) / ACCESS Project
- Dragonfly Mission
- GeoXO Flight Project
- DAVINCI+ Mission
- TSIS-2 Project
- JWST (James Webb Space Telescope)

Skills & Processes

Information Technology

- Artificial Intelligence (AI)
- Machine Learning (ML) Systems Development
- API Integration
- System Integration and testing
- Web Development
- Cloud solutioning and migration planning
- High Performance Computing
- Cybersecurity Penetration and Vulnerability testing
- Data Science and Data Analysis

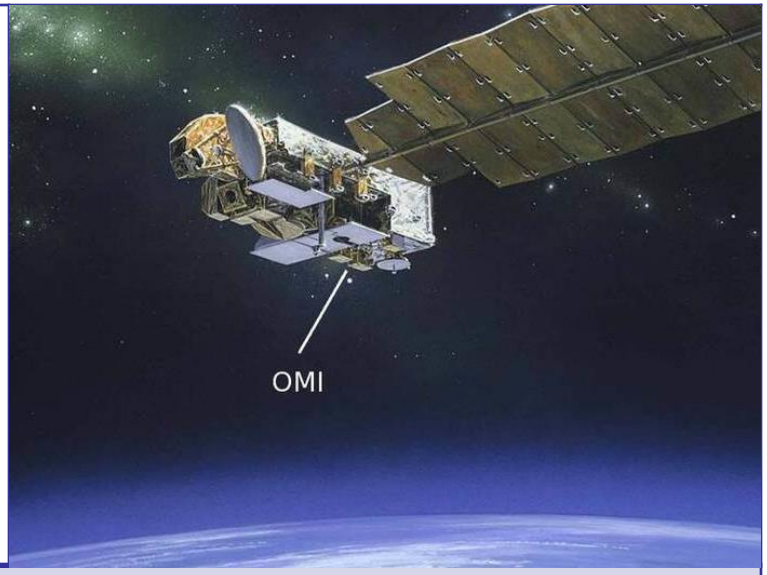
Missions Supported

- PACE (Plankton, Aerosol, Cloud, Ocean Ecosystem) Mission
- Crustal Dynamics Data Information System (CDDIS)
- Carbon-Cycle Modeling and Biosphere Studies
- NASA's Black Marble Projects
- ACCESS Projects
- OMI (Ozone Modeling Instrument)
- Deep Learning Academy (Corporate Program Supporting Multiple Missions)
- SCENIC Mission (Spaceborne Hyperspectral Imager on ISS)
- JEDI (Joint Effort for Data assimilation Integration) System
- GMAO (Global Modeling and Assimilation Office) Operational Systems

Skills & Processes

Science

- Data Assimilation
- Remote Sensing
- Oceanography
- Hydrology
- Biosphere Modeling
- Weather Forecasting and Prediction
- Space Weather
- Observing System Simulation Experiment (OSSE) for Mars

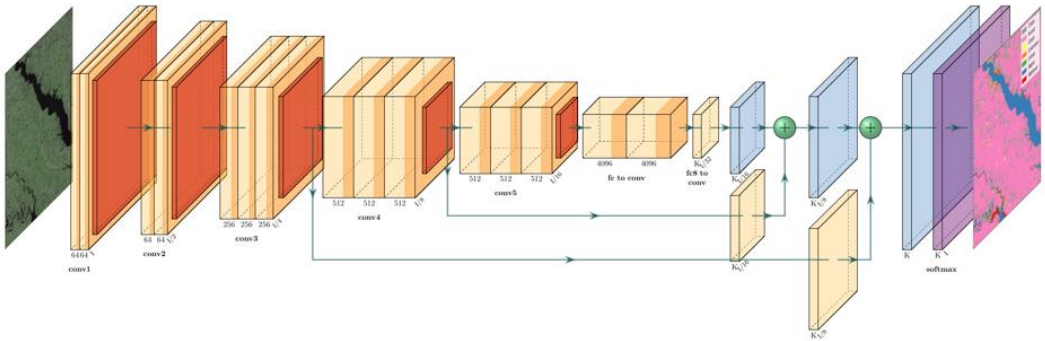


Missions Supported

- Ozone Monitoring Instrument (OMI)
- Ozone Mapping and Profiler Suite (OMPS)
- Cloud-Aerosol Transport System (CATS-ISS)
- Moderate Resolution Imaging Spectroradiometer (MODIS)
- VIIRS (Visible Infrared Imaging Radiometer Suite)
- Multi-angle Imaging SpectroRadiometer (MISR)
- EPIC (Earth Polychromatic Imaging Camera
- Cloud Physics Lidar (CPL)
- ICESat-2
- AVIRIS-NG (Airborne Visible/Infrared Imaging Spectrometer – Next Generation)
- TROPOMI (Tropospheric Monitoring Instrument)
- Geostationary Environment Monitoring Spectrometer (GEMS)

Skills & Processes

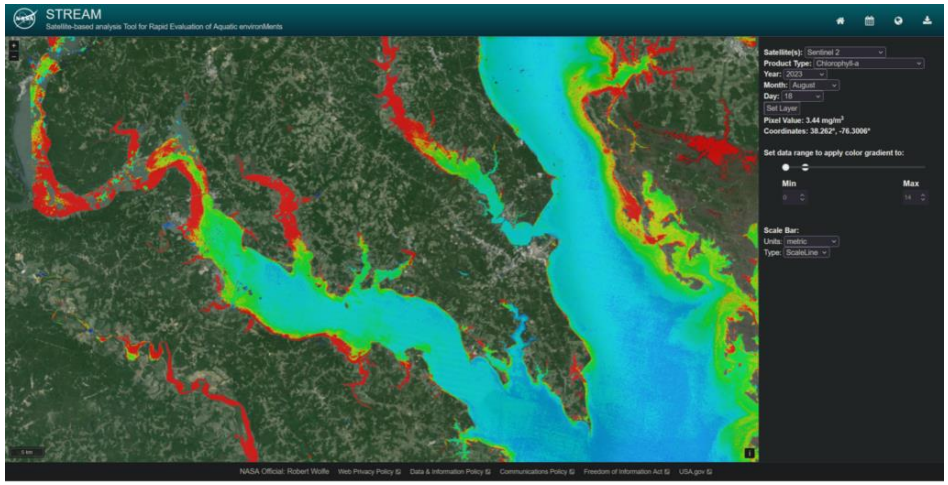
AI/ML	
Skills:	**Processes:**
• Advanced Data Processing: Clean, extract, and analyze complex datasets efficiently. • Embedded AI: Onboard, real-time decision-making for satellite systems. • NLP & LLMs: Custom chatbots and automated reporting tools. • Deep Learning Models: CNNs, RNNs, transformers for scientific analysis. • Unsupervised Learning: Anomaly detection and pattern recognition. • Transfer Learning: Adapt AI models to new missions and datasets.	• End-to-End AI Pipeline: From data discovery to deployment. • Cloud & Automation: Scalable infrastructure and automated pipelines. • Workforce Development: AI/ML training through SSAI's Deep Learning Academy. • Custom AI Solutions: Tools for digital twins, anomaly detection, embedded systems. • Cross-Mission Support: AI/ML applied across NASA and USGS science missions.

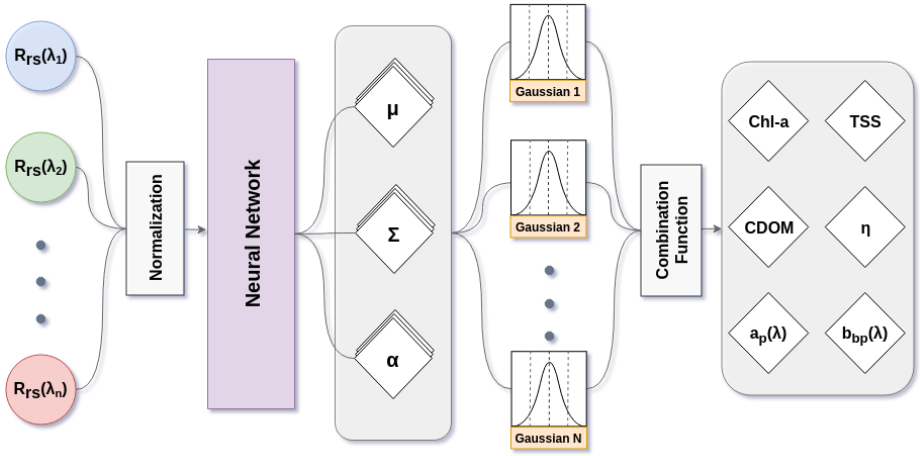


Platform developed by SSAI scientists
as part of NASA-funded projects, which offers globally validated water quality products to end-users.

Leverages Mixture Density Networks
– a type of ML neural network model – to transform satellite observations into usable data products for water quality monitoring.

STREAM enables low-latency detection
of anomalous water quality conditions via water quality map visualization, pixel value identification, and time-series plotting of pixels and regions.

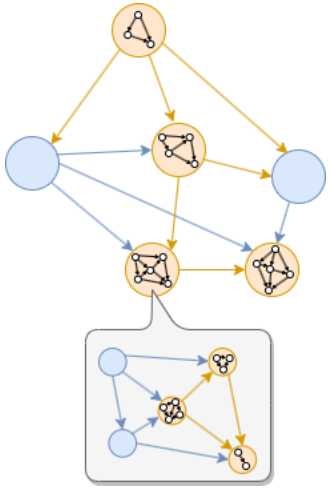




Coupled Reusable Earth System Tensor (CREST) Framework
An AI-enabled Python-based Digital Twin Framework

Rather than standalone forecasts, Earth System Digital Twins are envisioned as continuously updated digital replicas of the Earth system that aim to answer three foundational questions:

What now?	Nowcast or present state of the system
What next?	Forecast of short-to-medium term dynamics
What if?	Explore alternate futures under scenarios like deforestation or warming



Community-Based — make it easy to organize and connect the efforts of a diverse community spread across different groups and organization (particularly models).

Interoperable — support the integration of both AI/ML-based and traditional modeling technologies.

Accessible — a system that is always online, updating, and reachable through a web-portal and web-based user interface where end-users interact with it.

Customers

- NASA Goddard Space Flight Center
- Environmental Protection Agency (EPA)
- Los Angeles Unified School District (LAUSD)
- Los Angeles World Airport (LAWA)
- USGS
- NOAA

Manufacturing & Machining

(Wholly Owned Subsidiaries of SSAI)

Advanced Mission Partners

Manufacturing

•32,000 sq. ft. electronics manufacturing facility
•Printed circuit board (PCB) design, sourcing, fabrication, testing, and validation
•State-of-the-art equipment for intricate FPGA board repairs
•Secure facility with cleared personnel
•ESD-protected manufacturing floor
•3 clean rooms available for independent customer testing, validation, and verification

Sigma Engineering and Fabrication, Inc.

Machining

•10,000 sq. ft. machine shop located <2 miles from NASA Goddard
•Produces Mil-I-45208A and Mil-std-45662 compliant mechanical parts and assemblies
•Equipped with 4 CNC machines and multiple manual lathes, presses,
•and mills
•Staffed by 6 certified aerospace machinists
•7 3D printing machines for rapid prototyping in various materials

Principle Point(s) of Contact

NAME	TITLE	PHONE	EMAIL
Shilpa Bahethi	CEO	571 484-6948	shilpa.bahethi@ssaihq.com
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SSAI
We appreciate the opportunity!
Any questions?