

Embedded and Autonomy Software for Government Programs

We write the software that flies, drives, and controls hardware built for federal missions. NASA has funded our research, and we have delivered flight and ground software on NASA programs both directly and as a subcontractor under a major defense prime.

CORE COMPETENCIES

Most primes and program offices have the hardware covered. The gap is the software layer between the sensor and the actuator, and the interface between the system and the person responsible for it. That is what we build.

- **Embedded and real-time software:** bare metal, RTOS, embedded Linux
- **Perception and sensor fusion** on constrained edge compute
- **On-device autonomy:** path planning, behavior systems, degraded-network operation
- **Operator control interfaces,** teleoperation, and ground systems
- **Physics-based simulation** and synthetic training data

PAST PERFORMANCE

NASA CADRE

NASA JPL, 2023, SUBCONTRACT UNDER A MAJOR DEFENSE PRIME

Built and delivered the rover deployment software that lowers three autonomous lunar rovers from the lander, and the ground control interface for the ground-penetrating radar aboard each rover. The software is delivered. The mission has not yet flown.

NASA Mars Sample Return, Sample Retrieval Lander

NASA JPL, 2023, SUBCONTRACT UNDER A MAJOR DEFENSE PRIME

Designed and developed the test rack infrastructure used to validate the lander's flight hardware and software.

U.S. Army, operator control interface

2018, SUBCONTRACT UNDER TELEDYNE FLIR

Safety-critical operator control interface for a bomb-disposal unmanned ground vehicle program, delivered against a six-month U.S. Army deadline.

NASA STTR, two competitive research awards

T4.03-6090 (STTR 2020-1) AND T10.03-2297 (STTR 2021-1)

Communication-less coordination of robotic swarms, with Arizona State University. Robot simulation platform for source search and mapping, with the University of Nevada Las Vegas.

NASA Active and On-demand Multi-Robot Perception

NASA M-STAR, 2021 TO 2023

Simulator that generates and automatically labels synthetic Mars imagery with pixel-level ground truth, to train and test perception neural networks. With Fayetteville State University.

Industrial mobile robotics at fleet scale

Extensive perception and autonomy engineering for the world's largest manufacturer and operator of industrial mobile robotics.

CORPORATE DATA

UEI

XNK1DWJ4CCD9

CAGE

7WMX6

LEGAL NAME

Geisel Software, Inc.

BUSINESS SIZE

Small business

SAM.GOV

Registered and active

SOCIOECONOMIC

None held

EXPORT CONTROL

ITAR-ready

WORKFORCE

100% US-based

LOCATION

Worcester, Massachusetts

NAICS CODES

541512 Computer Systems Design Services

541330 Engineering Services

541519 Other Computer Related Services

541715 Research and Development in the Physical, Engineering, and Life Sciences

PRIME CONTRACTS WITH

- NASA

POINT OF CONTACT

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For subcontract, teaming, and technical inquiries.

DIFFERENTIATORS

We take the risk out of the software line on a hardware program.

Hardware programs slip on software, and embedded, perception, and autonomy engineers are the hardest roles a prime has to fill and hold. Geisel is a standing team in those disciplines and goes onto a program without a hiring cycle in front of it.

Sensor to actuator to operator, from one team.

Embedded and real-time code, perception, on-device autonomy, and the operator interface, under one roof. The integration risk between those layers stays inside our scope, where it is ours to manage.

We can start before the hardware exists.

Physics-based simulation and synthetic training data are in-house capabilities. Perception and autonomy development runs in parallel with the hardware build rather than queueing behind it, which is time a program gets back.

Behind all three: our code has gone through the review, test, and documentation required to fly on a NASA mission, and through a prime's security and reporting requirements. The engineers behind our past performance are the ones who do the work.