

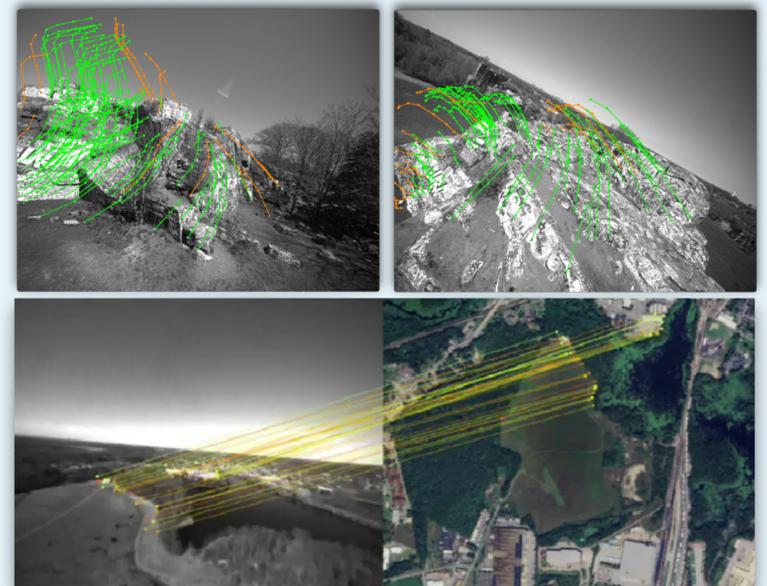
VOYAGER

SOFTWARE / HARDWARE

Edge-Native Autonomy:
Precision Navigation for GNSS-Denied Environments

+ PRODUCT OVERVIEW

Tycho AI's Voyager is a low-SWaP autonomy stack that fuses advanced AI-driven perception, navigation, and control into a compact module, enabling UAS to operate autonomously at speeds up to 200mph and altitudes as low as 25ft without GPS, comms, or active sensors.



Voyager combines visual inertial odometry (VIO) and satellite image matching to achieve high navigation precision without GPS

+ KEY CAPABILITIES

High precision navigation achieved by combining GNSS-denied visual-inertial odometry (VIO), and satellite image matching to achieve 5m absolute error after traveling 100+ km.

Real-time perception via foundation vision models, providing obstacle detection and 3D mapping for proactive avoidance in dynamic environments.

Agile trajectory generation; supporting high-speeds up to 320kph (200mph) at altitudes as low as 25ft and precision maneuvers calculated and rapidly adjusted even without connection to a ground station.

Platform-independent and can be integrated in different types of vehicles (multi-copter, fixed wing, helicopter...)

MISSION APPLICATIONS

- ✓ **Defense ISR:** Enables penetration of denied areas for intelligence gathering, minimizing human exposure and maximizing rapid data collection.
- ✓ **Defense Counter-UAS:** Predicts enemy UAS flight paths with <3 m CEP and quickly acts to intercept and neutralize at high speed.
- ✓ **Commercial SAR and Agriculture:** Facilitates navigation in GPS-unreliable zones like tunnels or remote areas, at low altitudes optimizing efficiency for dusting and rescue operations.
- ✓ **Reduces operator workload** through autonomous FPV enhancements, reconstructing environments during degraded comms for safer, more precise piloting; keeps rifles in operator hands.
- ✓ **Affordable custom integrations**, offering cost-effective upgrades that boost survivability, adaptability, and ROI in multi-domain scenarios.

VOYAGER

+ VOYAGER TECHNICAL SPECS

Hardware Dimensions	Credit card size: 2.1" x 3.15" Weight: 2 oz Power consumption: 30W	Autonomy Features	GPS - denied navigation Obstacle detection Obstacle avoidance Satellite image matching Waypoint pathfinding Aircraft interception Return to home
Compute Architecture	Nvidia Jetson SoC for autonomy Dedicated MCU for flight control	Operating Environments	Open Water Desert Snow GPS/Comms DDIL
Primary Sensors	EO/IR sensors Inertial Measurement Unit 1+ Camera	User Interface	Tycho.AI tablet for launch and monitoring
Optional Sensors	GNSS-TRK Barometer Magnetometer Laser Range Finder Commercial cameras LiDAR		
Navigation Performance	Sattelite image matching - 5m absolute error regardless of distance traveled VIO only - <1% relative position drift over distance traveled		
Speed and Altitude Support	All speeds - All altitudes As low as 25ft AGL As fast as 320kph+ (200mph)		
Compliance & Standards	MOSA/IOP-compliant Platform agnostics NDAA-aligned		



Voyager's compute system ready for custom integration onto any platform

CONTACT

tycho.ai

phil.pitsky@tycho.ai

571.598.5601

