FEATHEREDGE

ON-ORBIT DATA PROCESSING UNIT

SIDUS SPACE

Unparalleled On-Orbit Computing

FeatherEdge, a compact Data Processing Unit tailored for AI applications in orbit, redefines space efficiency. Its small size and low power design ensure seamless compatibility with diverse satellite platforms. By processing onboard sensor data directly and transmitting only crucial information, FeatherEdge slashes downlink costs and significantly bolsters response times for critical events in orbit.

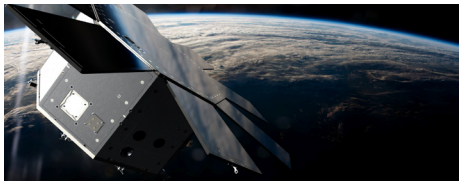
At its core, FeatherEdge integrates a robust AI computing module, operating as a fully-integrated Linux system. Capable of trillions of operations per second and boasting precision thermal management within its enclosure, it minimizes reliance on external thermal controls. This device combines cutting-edge computing prowess with space-grade reliability, delivering a complete AI payload in tandem with FeatherEdge Software for unparalleled on-orbit edge computing capabilities.

Benefits

- Space Efficiency
- Cost Reduction
- Rapid Response Times
- Cutting Edge Computing
- Reliability

Earth Observation Image Processing

- Enhance image processing capabilities for detailed Earth Observation (EO).

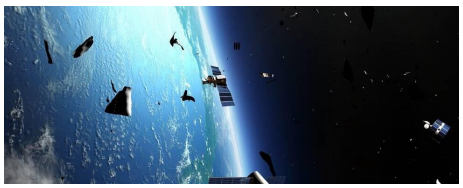


Autonomous Satellite Operations

- Enable Satellites to operate autonomously, streamlining mission tasks

Cloud Computing

- Facilitate cloud-based data processing for space applications

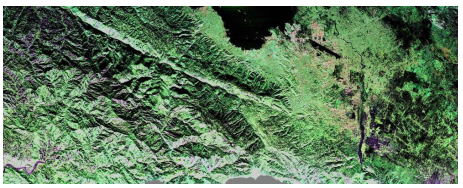


Space Situational Awareness

- Contribute to enhanced space surveillance and awareness

Data Storage and Compression

- Efficiently store and compress data on-orbit



Synthetic Aperture Radar (SAR)

- Improve radar capabilities for high-resolution imaging in space.

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	FeatherEdge Gen.1	FeatherEdge Gen. 2
Performance		
CPU	Quad-Cortex-A53	8-Core Arm Cortex-A78AE
GPU	2D/3D Vivante GC7000 Lite GPU and VPU	1024-Core NVIDIA Ampere
AI Performance	Coprocessor: 4 TOPS	Coprocessor: 100 TOPS
Microcontroller	PIC12 8-bit	Rad-tolerant ARM Cortex M7 32-bit
RAM	4 GB LPDDR4 SDRAM	16 GB 128-bit LPDDR5
Storage	40 GB SLCNAND Flash (ECC) 16 GB eMMC	680 GB pSLC NVMe SSD (ECC)
Interfaces		
Connectors	Micro-D, USB-C	Micro-D, M12, USB-C
Ethernet	1x GbE	3x GbE
USB	1x USB 3.1 Gen 1 (5 Gbps)	3x USB 3.2 Gen 2 (10 Gbps)
UART	2x RS-422	3x TTL
Other I/O	2x SPI, 2x I2C, 8x GPIO	2x SPI, 2x IPC, 1x CAN, 11x GPIO, JTAG, PWM
Properties		
Mass	1.4 kg	1.5 kg
Size	96 mm x 96 mm x 50 mm	100 mm x 100 mm x 65 mm
Power Supply	5V	5V
Power Consumption	3W Idle, 7.5W Typical, 22W Peak (tens of microseconds)	9.3W Idle, 20W Typical, 30W Peak (tens of microseconds)
Operating Temperature	-25° C to +85° C	-25° C to +85° C
Storage Temperature	-40° C to +85° C	-40° C to +85° C
Software		
Operating System	Linux Based	Linux Based
AI/ML Model Type	TensorFlow Lite	TensorRT
Software Package	Basic Software Package Included	Basic Software Package Included

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