



## ON-BOARD FEDERATED LEARNING IN ORBITAL EDGE COMPUTING FOR SPACE SITUATIONAL AWARENESS

Western Sydney University -  
University of Sydney - AU Cloud

*"Edge computing and federated learning techniques using reconfigurable computing to enable on-board space situational awareness (SSA) in smart satellite constellations."*

### Problem

Enhancement of the 'space cloud', a smart satellite constellation concept providing resilient and trusted global space services.

### Solution

The main objective of this project is to develop an architectural framework of orbital edge computing for satellite constellations to train machine-learning models for space situational awareness.

Using reconfigurable computing, the team will deliver a new technique to reduce energy consumption and training time, based on mixed-precision on-chip training.

The project will finish in 2024.

**START TRL: 2**

**EXIT TRL: N/A**

**DIN INVESTMENT: \$149,511**

**EXTERNAL INVESTMENT: N/A**

**NO OF RESEARCHERS: 5**

**NO OF NEW ROLES: 1**

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DIN Pilot Project  
Funding \$149,511

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