

## Deep reinforcement learning for autonomus control of wearable aviation system

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### ● Abstract

To develop autonomous control technique for a wearable aviation system.

### ● Reasons and benefits of using JAXA Supercomputer System

Supercomputer parallel computing is effective for controller generation using deep reinforcement learning.

### ● Achievements of the Year

To generate a attitude controller that can adapt to model changes, deep reinforcement learning was applied. A supercomputer was utilized during training to efficiently perform simulations. Theoretical analysis demonstrated that the generated controller is capable of adapting to changes such as variations in weight.

### ● Publications

N/A

### ● Usage of JSS

#### ● Computational Information

Process Parallelization Methods	OpenAI Gym and PyTorch.
Thread Parallelization Methods	OpenAI Gym and PyTorch.
Number of Processes	8 - 32
Elapsed Time per Case	12 Hour(s)

- **JSS3 Resources Used**

Fraction of Usage in Total Resources\*<sup>1</sup>(%): 0.00

Details

Computational Resources		
System Name	CPU Resources Used (core x hours)	Fraction of Usage* <sup>2</sup> (%)
TOKI-SORA	0.00	0.00
TOKI-ST	36.02	0.00
TOKI-GP	0.00	0.00
TOKI-XM	0.00	0.00
TOKI-LM	0.00	0.00
TOKI-TST	0.00	0.00
TOKI-TGP	0.00	0.00
TOKI-TLM	0.00	0.00

File System Resources		
File System Name	Storage Assigned (GiB)	Fraction of Usage* <sup>2</sup> (%)
/home	0.00	0.00
/data and /data2	0.00	0.00
/ssd	0.00	0.00

Archiver Resources		
Archiver Name	Storage Used (TiB)	Fraction of Usage* <sup>2</sup> (%)
J-SPACE	0.00	0.00

\*<sup>1</sup>: Fraction of Usage in Total Resources: Weighted average of three resource types (Computing, File System, and Archiver).

\*<sup>2</sup>: Fraction of Usage : Percentage of usage relative to each resource used in one year.

- **ISV Software Licenses Used**

ISV Software Licenses Resources		
	ISV Software Licenses Used (Hours)	Fraction of Usage <sup>*2</sup> (%)
ISV Software Licenses (Total)	0.00	0.00

<sup>\*2</sup>: Fraction of Usage : Percentage of usage relative to each resource used in one year.