

# Challenge of ARES Project

The First Japanese Student Team Developing  
Mars Rover

Danishi Ai

Tohoku university, Keio University | @AresPjt2022

## Mars Rover Robot international competition – ARES Project

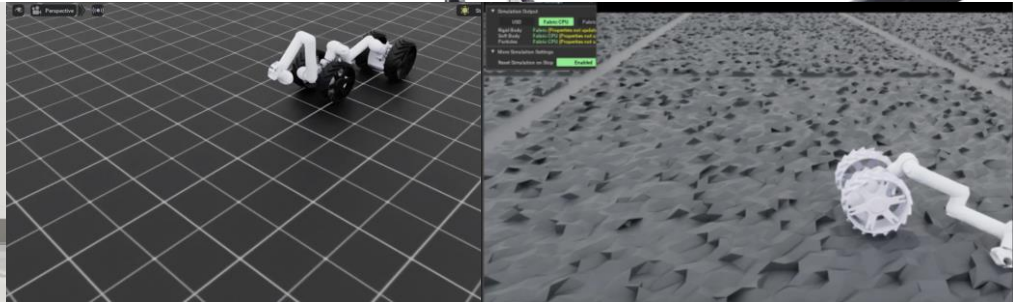


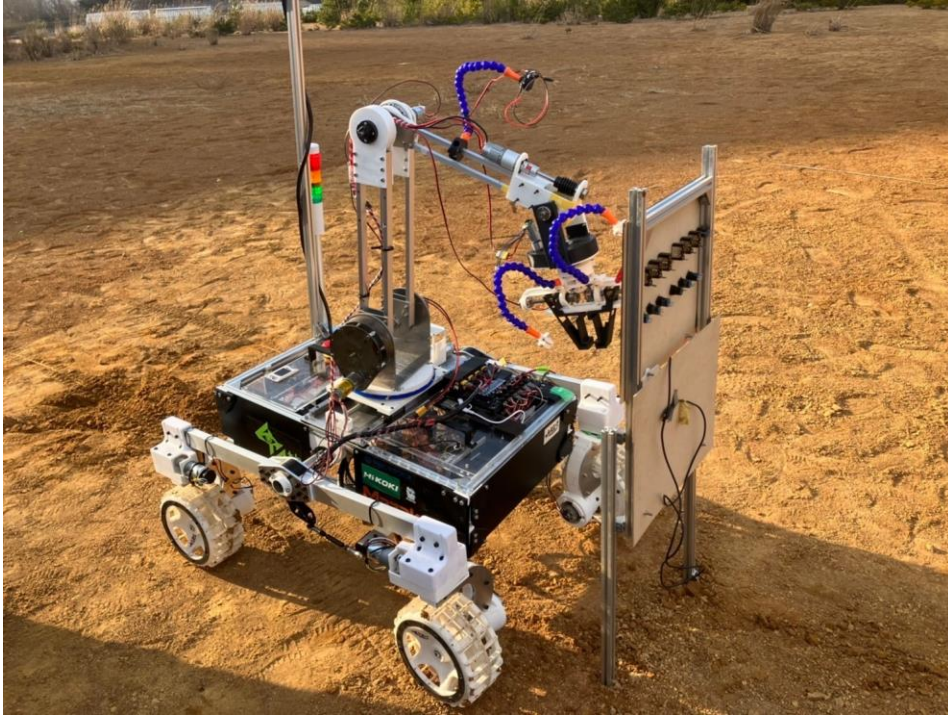
TOHOKU  
UNIVERSITY

**AI Danishi (Project Manager) PhD candidate 2<sup>nd</sup> Grade**

Department of Mechanical and Aerospace Engineering,  
TOHOKU University.

RL(Isaac) sim2real, Planetary exploration rover(robot)





# 01

## ARES Project



# Challenge International Mars Rover Competition

# University Rover Challenge (URC)



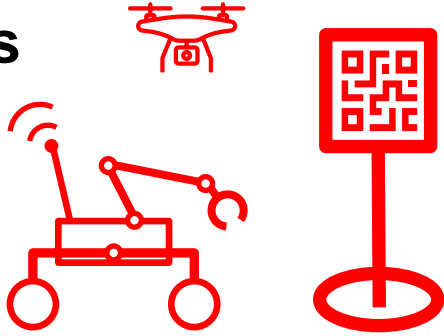
<https://engineering.usu.edu/mae/students/senior-projects/fall2018-spring2019/university-rover-manipulation>

- Student Mars Rover contest
- Every year in The United States Utah Mars Desert Research Station (MDRS)
- Compete in the performance of the Mars Exploration Rovers developed

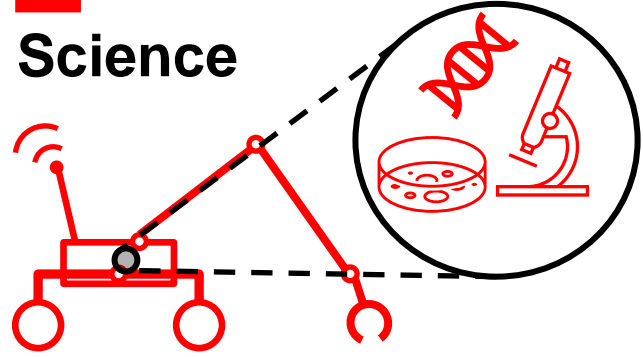
**URC**

# 4 Mission

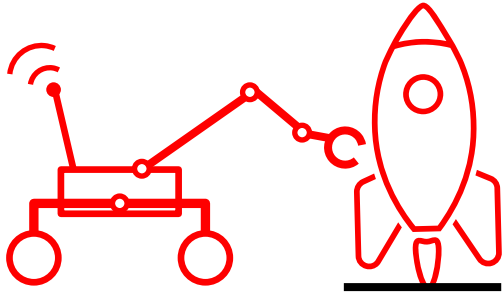
## Autonomous Navigation



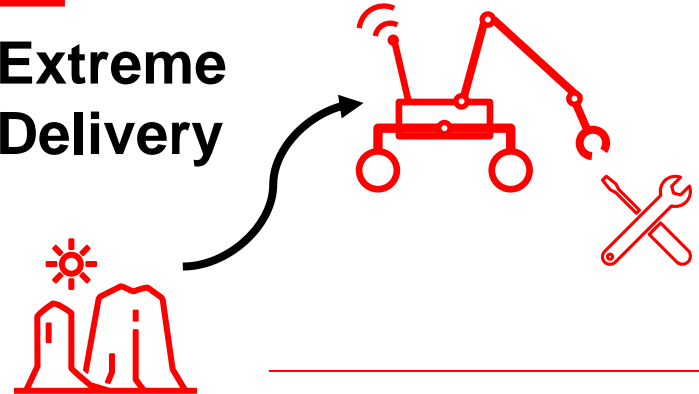
## Science



## Equipment Servicing



## Extreme Delivery



# About Us

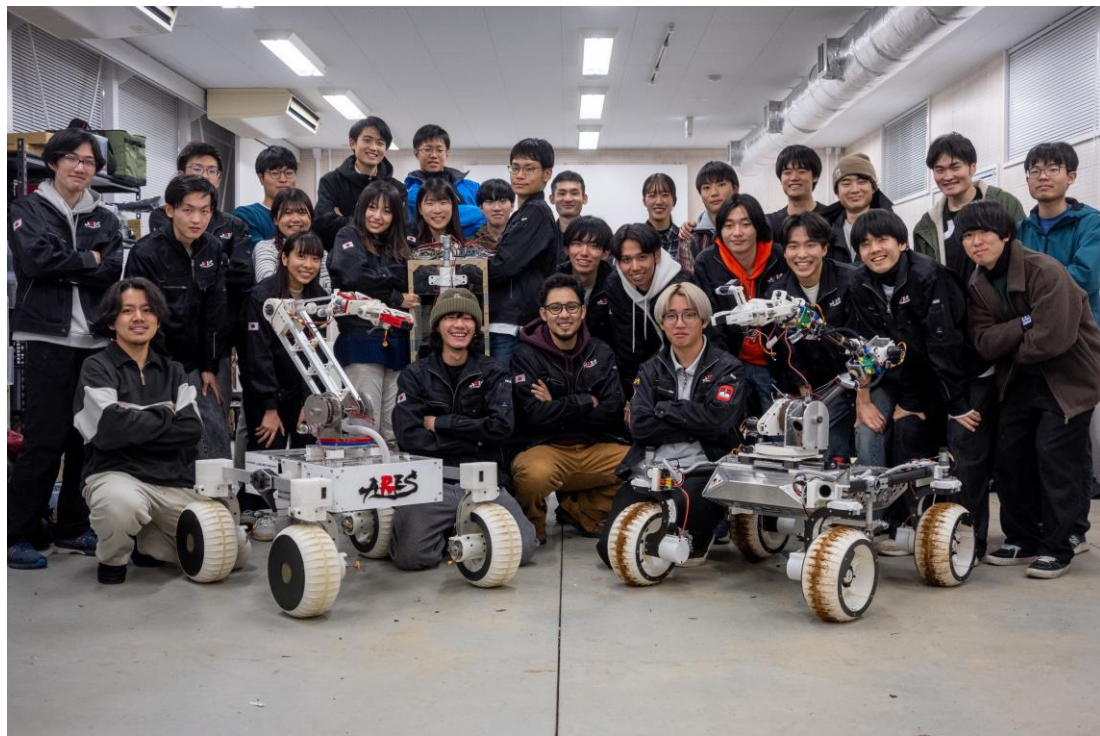
- Started with only **3 member**
- No fund, No sponsor, No University support
- Started with **passion to URC, Space Exploration**



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# About Us

- **Japan's first student team** to develop a Mars rover
- More than **40 students**, mainly from Tohoku University and Keio University
- Aiming to participate in the Student Mars Rover Contest







# Our Team

## Tohoku Team



Rover R&D

## Tokyo Team



Robotic Arm R&D

## Science Team



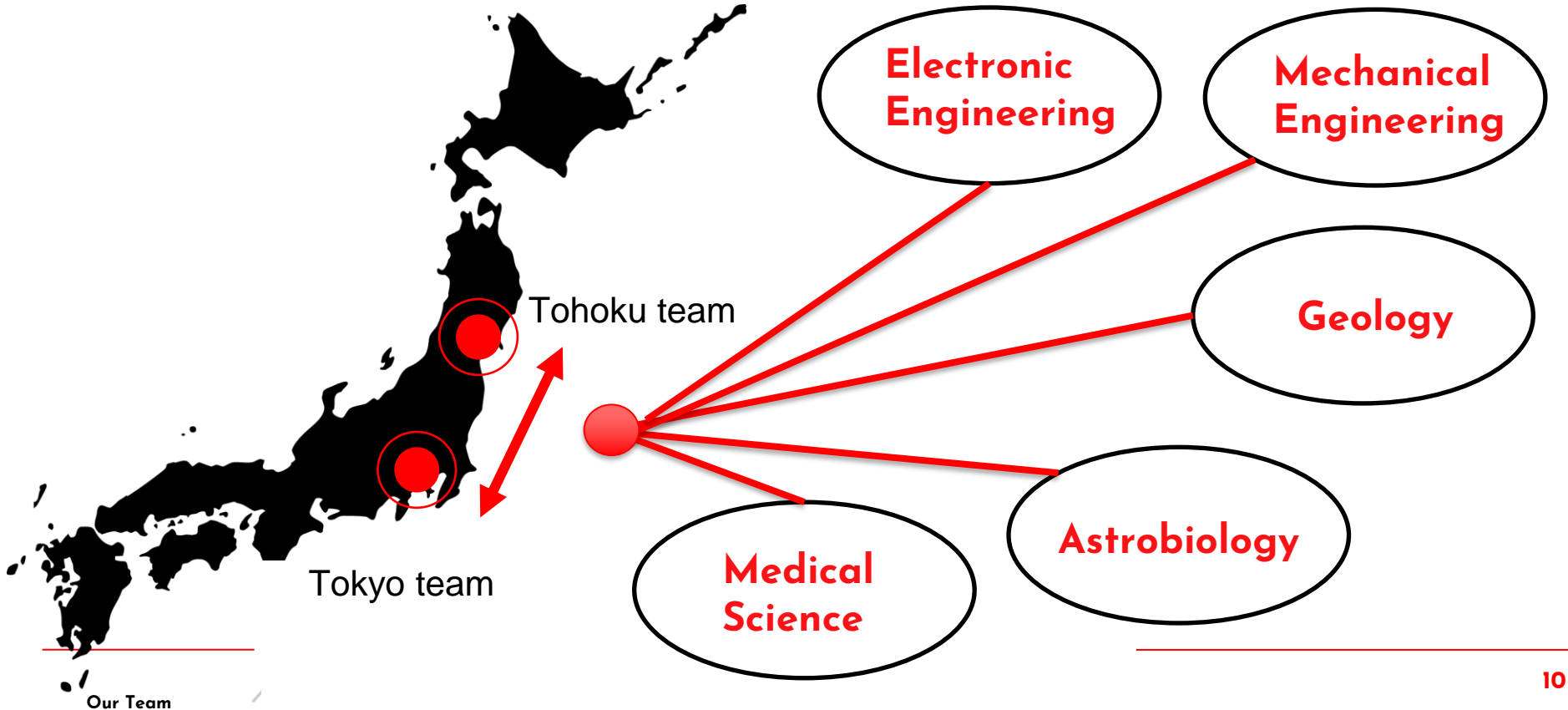
Science mission modules

## PR Team



Contact between  
sponsors

# Multidisciplinary Students from wide range Universities in Japan



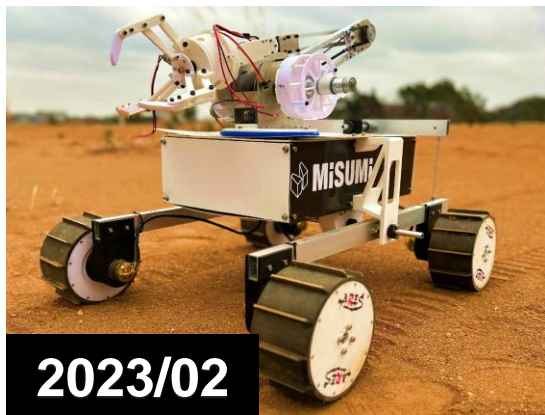
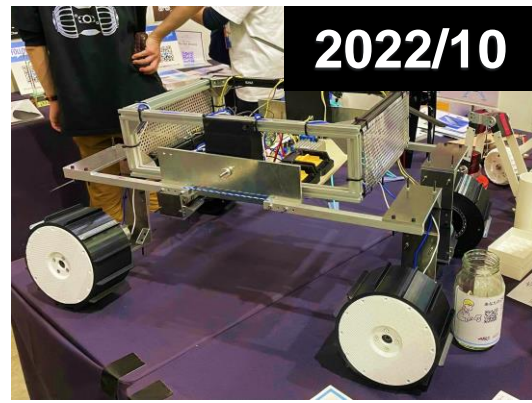
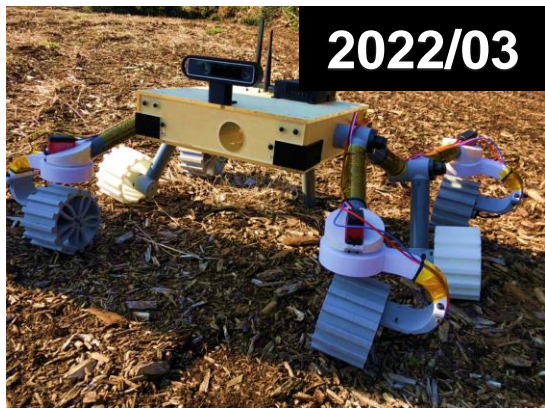


A stylized logo for 'ARES' rendered in a brush-stroke style. The letters are black, except for the 'R' which is a vibrant pink. The strokes are thick and expressive, with visible texture and some bleed-through at the bottom.

**ARES**

The word 'Rover' in a bold, red, sans-serif typeface. The letters are clean and modern, with a slight shadow effect.

**Rover**

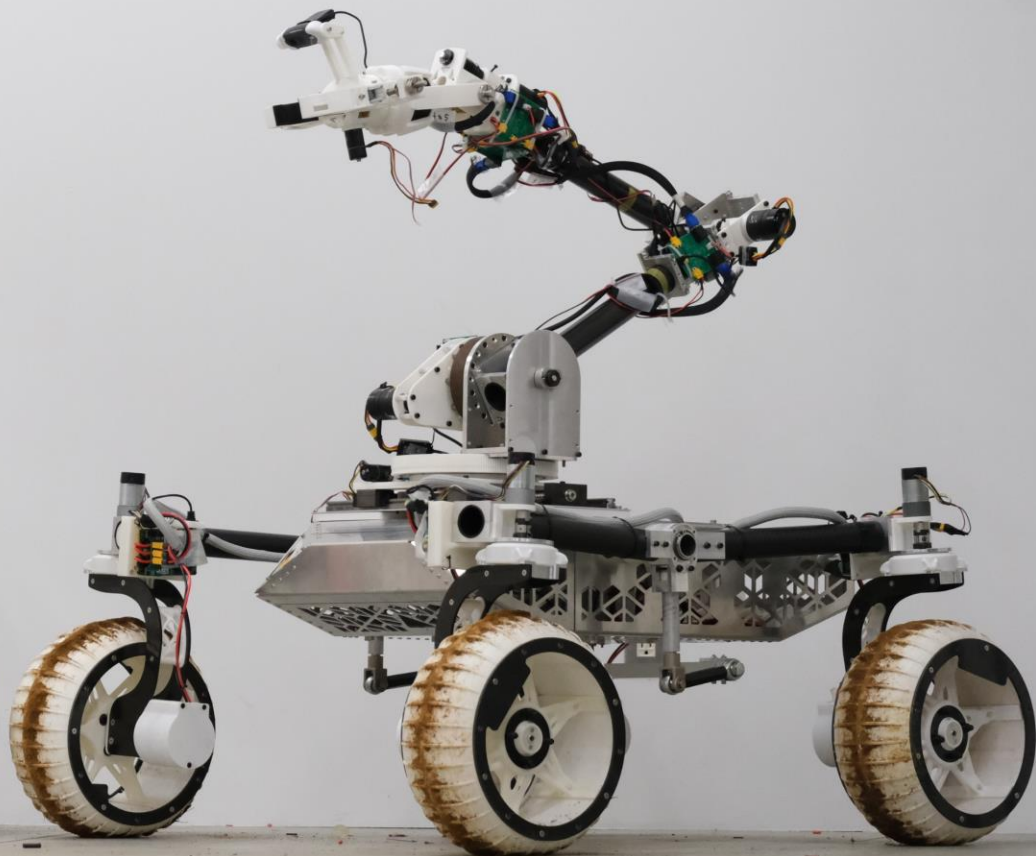
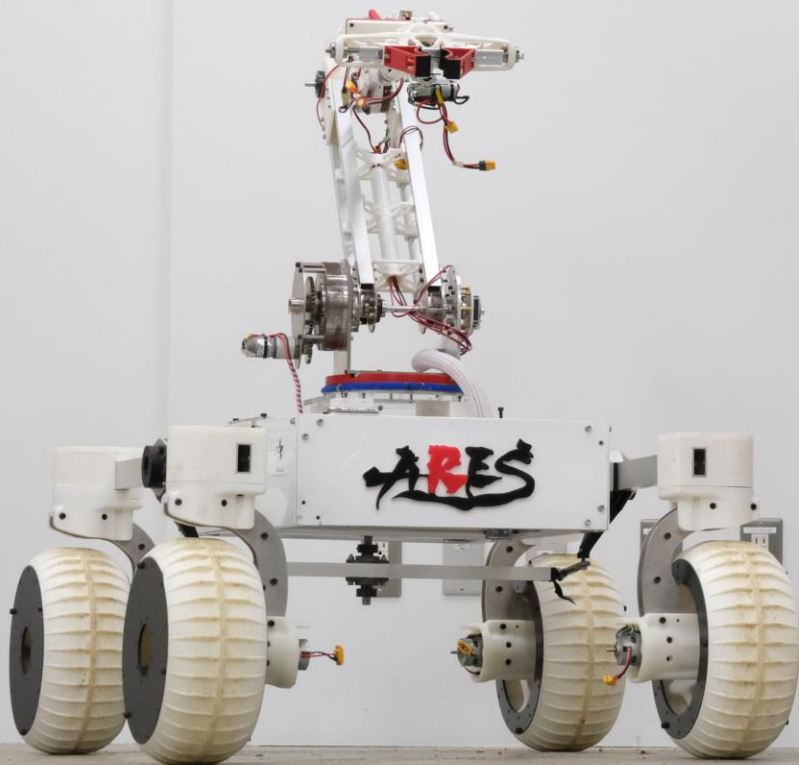


A white six-wheeled rover, identified as ARES 7, is shown on a dirt field. The rover has a prominent arm with a red and white gripper. The name 'ARES' is visible on the side of the chassis. The background consists of green bushes and trees under a blue sky with white clouds. A vertical red bar is on the left side of the image.

**ARES 7**  
**2024/05**



**ARES 8**  
**2024/12**





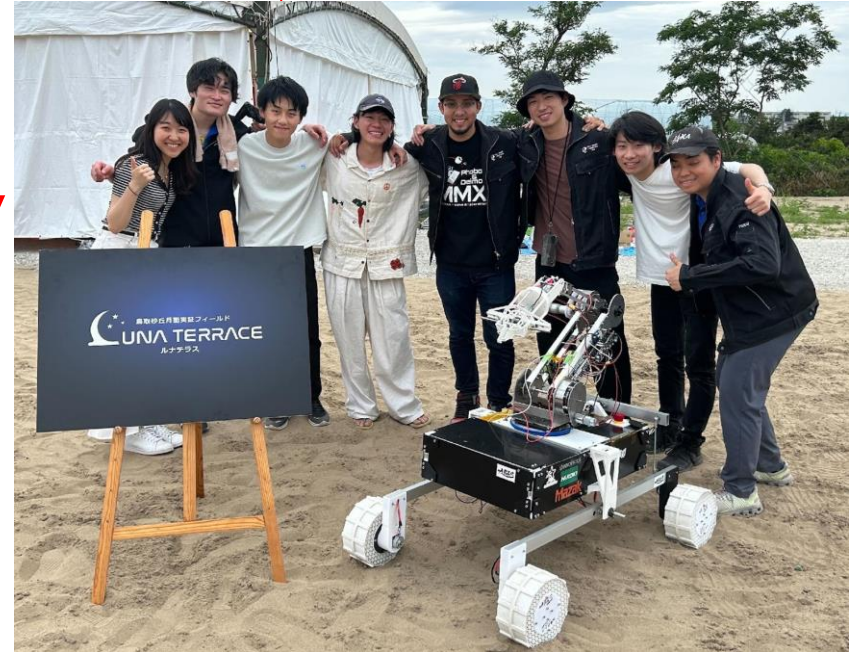


# 02

## Activity Report

# Mobility Test at “Lunaterrace,” in the Tottori Sand Dunes

- Participated in the **opening ceremony**
- conducted the **ARES-5 mobility test**



# CNN TV Tokyo Yahoo news NHK “Teremasa” Apple CM etc

CNN Science Space Life Unearthed



Apple logo

Macで  
火星探査機を  
設計する。



大学 火星ローバー開発サークル  
ARES Project

毎週木曜 夜 10時58分放送

探究の階段

次回予告

【予告】探究の階段 #179 4月13日(木)より10時58分からは共有



阿依ダニシ  
ARES Project代表  
/ 東北大学 大学院生

2023年4月13日 (木)  
火星探査世界大会出場を目指す学生チーム / 阿依ダニシ (ARES Project代表 / 東北大学 大学院生)

いつか火星へー探査機開発の世界大会、日本初出場に青春をかけるウイグルルーツの学生#ydocs

10/12(土) 17:01

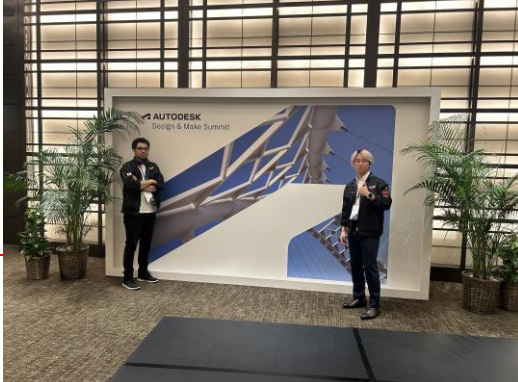
馬井由佳子 | エキスパート | 映像ディレクター



いつか火星へー探査機開発の世界大会、日本初出場に青春をかけるウイグルルーツの学生#ydocs

0:01 / 10:59

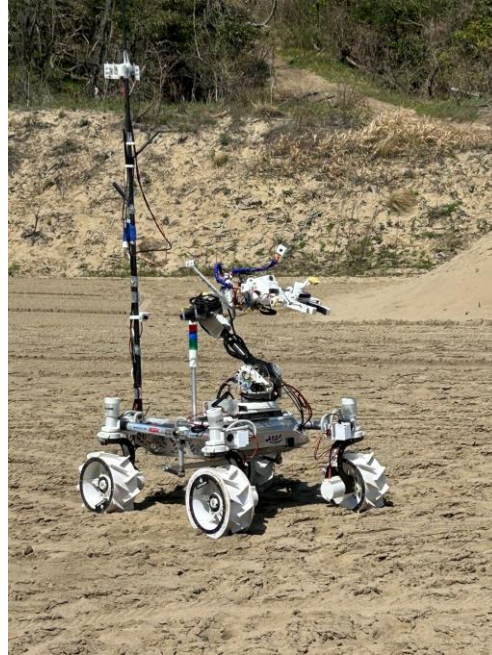
# ← Exhibition, Presentation



# Munakata Children's University "Spring Extracurricular Class"



# Tottori Rover Challenge – **Won Grand Prize**



**2025/03**



# 03

## URC2024



**URC2024**

**First Japanese Student  
Team to compete**



# URC2024

**15** Country, **102** teams

**38 teams** are selected to  
Finals

**23** members from ARES  
to URC



# URC2024



# Results in competition

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## Spirit Award

Science Mission Presentation  
Excellence Award

Huge damage to Rover





**We acquired significant  
insights into technical  
development and team  
management.**



**URC2025**

**Try for grand prize**



**04**

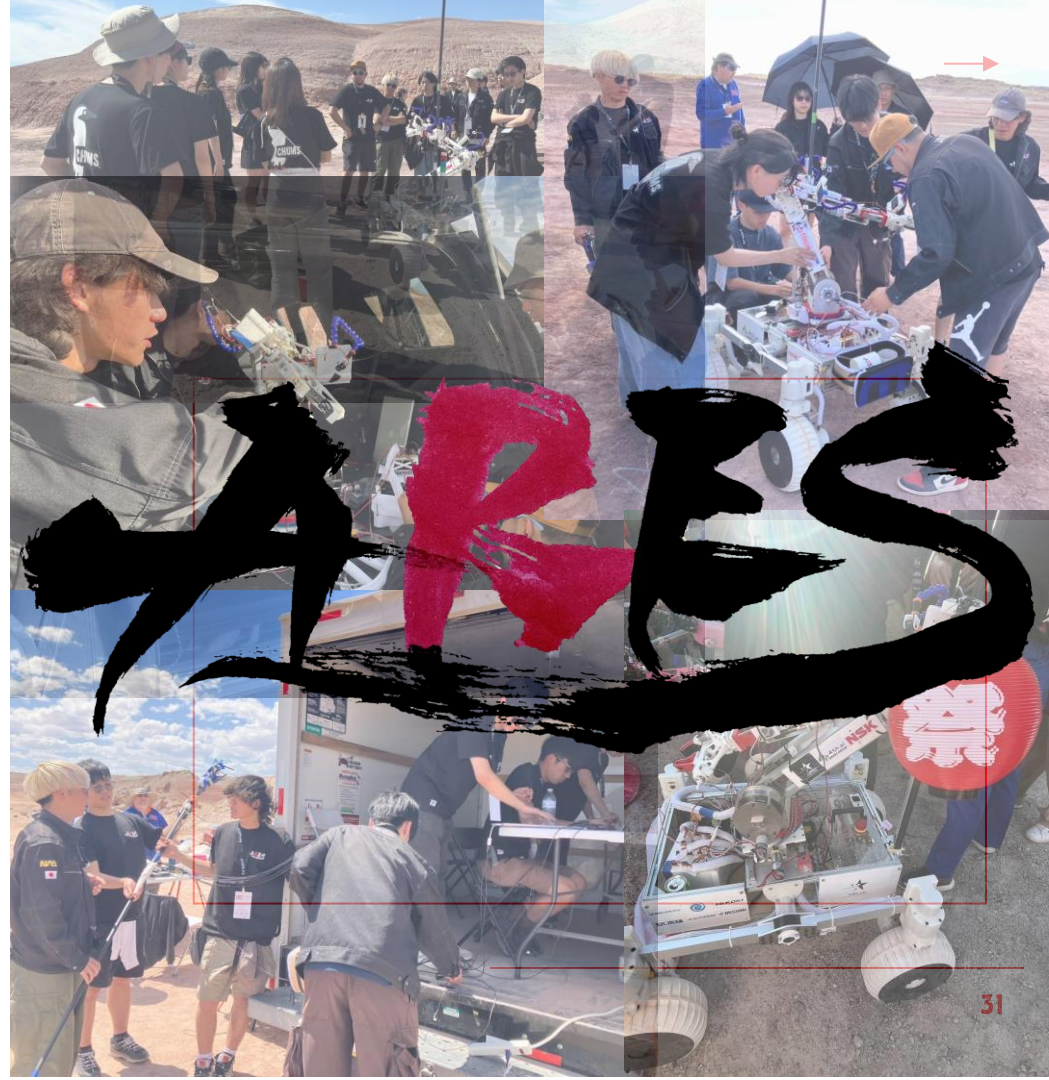
# **Future Aim**



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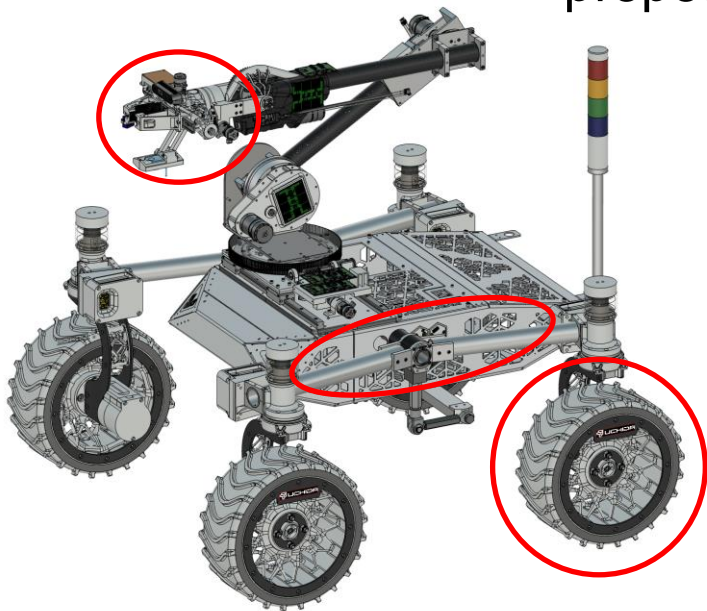
# Future

- Boosting student rover development in Japan
- We are determined to win the world championship
- **Try real space missions**



## For actual space mission

- Single component can reach actual space
- Real test with research propose



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<https://www.webcg.net/articles/-/45519>



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[https://www.drone.jp/news/2024060911222790349.html#google\\_vignette](https://www.drone.jp/news/2024060911222790349.html#google_vignette)



# Future Space exploration

By taking on **Japanese student's first challenge** ourselves, we will boost the student planetary explorer field **and further develop Japan's space development in the future.**



A close-up, low-angle shot of a modern, metallic staircase with a glass railing, set against a white background. The railing is made of clear glass panels held by polished metal brackets. The stairs themselves are also made of polished metal, creating a sleek and contemporary look. The lighting is bright, highlighting the reflective surfaces of the metal and the transparency of the glass.

**Thank you for listening**