Title: International collaboration leads to innovative solutions for exoplanet atmosphere analysis

The Ariel Data Challenge, a global competition focused on advancing research in space science and exoplanets, has concluded its 2024 round with remarkable results.

The Data Challenge offers participants an opportunity to contribute to cutting-edge research in the fascinating field of exoplanet atmospheres. Each year, the challenge focuses on a different problem related to the Ariel mission and space science. This year's challenge focused on overcoming various noise sources, such as "jitter noise" caused by spacecraft vibrations, which can complicate the analysis of spectroscopic data used to study exoplanet atmospheres.

The 2024 edition attracted 1,414 participants, based in 75 countries around the world, who competed for the $50,000 prize pool. Over the course of three months, the participants generated a remarkable 23,024 submissions, averaging more than 200 submissions per day.

In an impressive field of competitors, six teams distinguished themselves:

1st Place: Kohki Horie (PhD student) and Yamato Arai (Master's student) from the University of Tokyo (Team c-number + daiwakun)

2nd Place: Jeroen Cottaar, Data Scientist at ASML (Team Jeroen Cottaar)

3rd Place: Vincent Debout and Sébastien Goulet from CS Group (Team Space Coder)

4th Place: Shlomo Ron (Team greySnow)

5th Place: Team Youri + Pascal

6th Place: Dmitrii Rudenko from LMU Munich (Team Through the Thorns to the Star)

Most of the winning teams will be presenting their solutions at the prestigious NeurIPS 2024 conference on December 14th, 2024.

This groundbreaking challenge was made possible through a collaborative effort led by the UCL Centre for Space Exochemistry Data, bringing together an impressive international team of academic partners including the Centre National d'Etudes Spatiales, Cardiff University, Sapienza Università di Roma, and the Institut Astrophysique de Paris (Sorbonne Université, CNRS).

The Ariel Data Challenge 2024 was generously sponsored by the Kaggle Competitions Research Program and the Centre National D'Etudes Spatiales. The competition also benefited from the support of a consortium of leading space agencies and institutions, including the UK Space Agency, European Space Agency, Europlanet Society, STFC RAL Space, and STFC DiRAC HPC Facility.

Ariel Data Challenge Lead, Dr Gordon (Kai Hou) Yip said, “I want to give a big shout-out to our winners who really stood out in this intense competition. I can't thank everyone enough who put in their time and energy over these past three months. Your work is what helps us break new ground in data analysis and really push the envelope of what we can achieve in this field. ”

The Ariel Data Challenge 2024 represents a significant milestone in the ongoing efforts of the Ariel Mission to explore and understand the complex environments of exoplanets, paving the way for future breakthroughs in this dynamic field of space exploration.