Workshops
@COSPAR 2020

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Anchor Sponsor

LOCKHEED MARTIN

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WORKSHOP 1

Machine Learning For Space Sciences

The widespread availability of machine learning (ML) technologies promises to disrupt scientific disciplines.

Popular open source ML frameworks are not only useful for data-driven model fitting, but also for efficient computation of physics-based models. This COSPAR 2020 workshop is dedicated to showcasing use cases of ML technologies to observational and simulation data.

This includes applications to:

- satellite imagery classification and image restoration (including super-resolution),
- space weather prediction,
- exoplanet detection and characterization,
- astrophysical simulations,
- data augmentation,
- compressed sensing and inverse problems.

Technical Organizing Committee

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WORKSHOP 2

Autonomy for Future Space Science Missions

The rise of machine learning (ML) and artificial intelligence (AI) techniques is creating opportunities for space science missions with unprecedented capabilities. By augmenting traditional rule-based decision making with AI techniques (such as decision policies in deep reinforcement learning), robotic missions may become highly autonomous. Furthermore, ML advances will augment the capabilities of crews serving in extended space missions.

Questions to be explored in this COSPAR 2020 workshop include:

- How will ML/AI enable autonomous space science missions?

- What platforms are available for low-power, high-throughput compute in space?

- How can advances in ML augment human capabilities in crewed missions?

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WORKSHOP 3

Cloud Computing for Space Research

As space becomes increasingly accessible due to the burgeoning global space industry, the volume of data produced by space research missions is expected to continue rising exponentially.

Opportunities for accelerating scientific discovery come with challenges in scaling traditional scientific processing workflows. A possible model for addressing such needs is the adoption of cloud compute technologies and open source software. At the same time, the deployment of cloud compute technologies can allow researchers to address calls for scientific reproducibility.

This COSPAR 2020 workshop will include tutorials and case studies addressing the following questions:

- What cloud compute offerings are available for space researchers to develop workflows?

- How can we use open source software and cloud compute to massively scale scientific data processing?

- How can scientists equip ourselves with the skills to take advantage of these technologies?

- How can cloud compute and web technologies be used to engage the public in citizen science, and for enhancing STEAM* education?

*Science, Technology, Engineering, the Arts and Mathematics (STEAM)

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