

ACCESS WORKSHOP Machine Learning Working Group day

5 Sep Thursday, Canberra

Co-chairs/organisers: Ryan Holmes (BoM), Vassili Kitsios (CSIRO), Sanaa Hobeichi (UNSW), Tennessee Leeuwenberg (BoM, not attending)

ACCESS-NRI liaison: Micael Oliveira (ACCESS-NRI)

Room/Zoom Details:

Machine Learning Working Group – Suzanne Cory Room

<https://anu.zoom.us/j/81177105740?pwd=2OyfVo0F3FczzzGAR1zu0irNggFTtD.1>

Meeting ID: 811 7710 5740

Password: 595448

Invited speakers:

Session1

1. **Yue Sun [in-person]**- “Forecasting models with physical laws incorporated”
2. **Terry O’Kane [Confirmed]** - ML projects (seasonal forecasts - causal inference)
3. **Edison Guo [in-person]** - “NCI-CorrDiff: Corrective Diffusion Modeling for Km-scale Downscaling”
4. **Sanaa Hobeichi [in-person]** - “Revisiting Tabular Machine Learning and Sequential Models to Advance Climate Downscaling”

Session2

5. **Vassili Kitsios [in-person]** - “Physics-constrained data-driven reduced-order model of the global atmosphere”
6. **Rui Yang [in-person]** - “NCI AI/ML environments”
7. **Maruf Ahmed [in-person]**- “NCI WeatherBench : An ML/AI benchmark dataset for medium-range weather forecasting”
8. **Debbie Hudson [Confirmed]** - “Evaluation of pre-trained ML models for NWP and sub-seasonal forecasting”

Agenda:

Main NRI workshop agenda: <https://www.access-nri.org.au/access-community-workshop-2024-program/>

9-9:30 ACCESS Community Workshop Community-wide plenary talk

Session 1 (9:30-11, chair: Vassili)

9:30-9:40: Introduction - what we want to get out of today and out of this working group.

- Include an overview of existing activities in this space - e.g. Tennessee’s Bureau reading group, Harrison’s Bureau/UNSW meetings?
- Include a draft “purpose statement”/dot points on our purpose (see below)

9:40-11: 4*(15 + 5 min) talks

11-11:30: Morning tea (with all other WGs).

Session 2 (11:30-13:00, chair: Ryan)

4*(15 + 5 min) talks (+ 10 mins wiggle room)

13:00-14:00: Lunch (with all other WGs).

Session 3 (14:00-15:30, chair: Sanaa):

Discussion focused on questions: - There will be a poll (Slido) with some suggestions + a space for the community to suggest new ideas.

- What do we want this WG to be?
- What type of meetings and events do we want to run?
- How do we best build up the community and bring together ML experts and climate/weather scientists?
- How do we best make the most of NRI resources (both compute time and human support) for this group?
- What topics would you like to see discussed during the regular community meetings
- What should our specific action items be?:
 - Announcing that the meetings are on the first Friday of the month at 2pm
 - Sending out a form where people can signup if they would like to receive a calendar invite to join the monthly meeting?
 - Survey the community for interest and appetite for contributing.
 - Put together a website to facilitate administration and collaboration.
 - Put together a session proposal for AMOS next year (due september 25th).

Draft purpose statement

- To facilitate mutually-beneficial collaborations between climate/weather scientists and ML experts
- To create a platform for knowledge exchange where ACCESS-NRI/NCI/climate community and ML experts share insights, data, and methodologies to accelerate progress in both fields.
- To advise ACCESS-NRI/NCI/climate community on advances in ML climate/weather science and techniques and their impact on future directions in climate/weather research (e.g. modelling, resourcing etc.)
- To ensure that the Australian community does not fall behind international progress in these areas (applications of AI in climate research).
- To contribute to the training of climate/weather scientists in applying ML to their research (through organised events/ resource sharing).