

Fostering the Use of AI for Power System Transformation

June 21, 2022

Speakers: Baosen Zhang, Ferdinando Fioretto
Moderated by Priya Danti

Co-hosted by:



March 2022 webinar: Open Discussion with Global Power System Operators: The AI Opportunity

Questions from the **Global Power System Transformation Consortium (G-PST)** Research Agenda:

- #12: What approaches can be taken to near real-time system modeling and control with large quantities of inverter-based resources (IBRs) that make designing for system stability sufficiently accurate and still tractable? [Control]
- #27: How do control rooms address uncertainties in weather conditions that impact loads and renewable energy output and rate of change (ramps)? How can probabilistic forecasting techniques be better incorporated into real-time operations? [Forecasting]
- #37: What additional probabilistic planning methods and tools are necessary for planning a power system with a high share of IBRs and, in particular, variable renewable energy resources? [Planning]



Climate Change AI Webinar Series March 2022 **GLOBAL PST CONSORTIUM** **EPRI**

Open Discussion with Global Power System Operators: The AI Opportunity

The Global Power System Transformation Consortium (G-PST) is a coalition of the world's leading power system operators, aiming to dramatically accelerate the transition to low-emission, low-cost, secure, and reliable power systems. In this open discussion, representatives from these power system operators will share their impressions of the **opportunities, challenges, bottlenecks, and on-the-ground realities** associated with several areas of innovation identified in the inaugural G-PST research agenda. They will then invite questions and impressions from the research community, with a particular focus on how AI and machine learning may contribute.

This session aims to begin an **active and ongoing discussion between power system operators and members of the power systems and AI/machine learning research communities**, with the goal of forming collaborative teams that go on to address the challenges discussed. To facilitate this goal, we ask that participants briefly consult the pre-readings listed on the registration site ahead of the session.

This event is co-organized by **G-PST, Climate Change AI (CCA), and the Electric Power Research Institute (EPRI)**, as part of EPRI's Artificial Intelligence Grand Challenges initiative. Participants include **AEMO (Australia), CAISO (USA), EirGrid (Ireland), Energinet (Denmark), ERCOT (USA), and National Grid ESO (Great Britain)**.

Participating system operators:



Tuesday, March 1, 2022
3-4:30pm Eastern Time / 8-9:30pm UTC
More info:
www.climatechange.ai/register/ccai_webinar

Today's Agenda

- 5 min intro presentations from each speaker
- 20 min moderated Q&A
- 25 min open Q&A and discussion



GLOBAL PST CONSORTIUM WEBINAR SERIES **ESIG**

Fostering the Use of AI for Power System Transformation
June 21 @ 4:00 pm - 5:00 pm EDT


Baosen Zhang
Associate Professor,
University of Washington


Ferdinando Fioretto
Assistant Professor,
Syracuse University

REGISTER NOW!

As a part of the focus on building the AI and Electric Power Industry Community, EPRI released a series of [5 Grand Challenges](#) during its recent [AI and Electric Power Summit](#). The purpose of these grand challenges is to help bring together a wide group of scientists, engineers, AI practitioners, decision-makers, regulators, and policymakers from across industry to accelerate development, benchmarking and deployment of AI and machine learning tools across industry.

1. Grid-Interactive Smart Communities
2. Energy System Resiliency
3. Environmental Impacts
4. Intelligent and Autonomous Power Plants
5. AI-Enhanced Cybersecurity



Climate Change AI

Catalyzing impactful work at the intersection of climate change and AI

- A global **network** of researchers, industry players, policymakers, etc.
- Digital **resources** for working in this space
- **Advice** for relevant stakeholders
- **Events** for knowledge-sharing



Climate Change AI



Catalyzing impactful work at the intersection of climate change and AI

Digital resources

Foundational report on climate change and AI (plus summaries and tutorials)

Resource Wiki w/ datasets and additional resources

+ Forecasting supply and demand

High Level

+ Improving scheduling and flexible demand

Conferences & events

Workshop series

- Submit and/or attend
- Mentorship programs

Summer school (multiple tracks)



Funding programs

Global research funding for impactful projects

- Focus on fostering **pathways to impact** and the creation of catalytic **datasets**
- Submission **deadline** on **October 15th**

For more info on the grants & submissions, please visit:
climatechange.ai/calls/innovation_grants

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Community, newsletter, & blog



Calls for Submissions



Funding



Projects & Courses



Readings



Jobs

Welcome to the Climate Change AI community!

We are excited to have you here!

This is a place to connect, share and discuss all things related to climate change & machine learning 🌍🤖

If this is your first time here, you might want to head over to the 🗣️ Hello channel and introduce yourself.

Webinars & happy hours

Webinar series (monthly)

Virtual happy hours (biweekly)

Cities represent the lion's share of the world's energy use and GHG emissions, requiring rapid mitigation action. The spatial configurations of the built environment, in particular buildings and streets, strongly impact energy requirements for housing and mobility, depending for example on the density or destination accessibility in cities. In this webinar, we will go over machine learning approaches to analyze large volumes of data and find urban planning strategies that can both reduce the carbon footprint of cities and improve the quality of life of their residents.



Tao Tao
PhD Candidate
Humphrey School of Public Affairs at
the University of Minnesota



Dr. Mafalda Silva

Learn more & join in:
www.climatechange.ai

   [@ClimateChangeAI](https://twitter.com/ClimateChangeAI)