State-of-the-art AI driven Solar PV Generation Forecasts
Problem

Energy Industry

Mountain of pain

Researchers

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Solution

Energy Industry

Researchers

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Solution

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Where forecast inaccuracies impact

- Solar Farm Revenues
- Keeping gas off the grid
- Getting to Net-Zero
Solar Farms must submit their forecast daily to National Grid.

They buy or sell power back when their forecast is incorrect.
Keeping Gas off the Grid

○ Consider the (mostly gas) generation required to manage these errors

○ Over 180,000 tonnes p.a. of CO2 on the grid is due to PV forecast errors

..... And rising!
“Embedded solar is one of the biggest sources of uncertainty in our net demand forecast, which is crucial to our operations "

Lyndon Ruff, AI Centre of Excellence Manager, National Grid ESO
How to do better forecasting
Numerical Weather Models
- NWMs can’t resolve clouds.
- NWMs take hours to execute
  - Stale for short horizons

Humans + Satellite Images
- Used by meteorologists to “adjust” forecasts
- Very useful over short time horizons

Combine machine and human learning
Model that can use “multi-modal” data
Perceiver I/O Model

- PV data
- Satellite imagery
- Numerical Weather Predictions
- Topographic data

OCF ML Model

PV forecast
Open source

- Get inbound help
- Keep up to date
- Share IP more efficiently
- Attract tech talent
- \(\rightarrow\) Accelerate to net zero
Results
Installed capacity in UK ~13.5GW
Drivers of Accuracy

Satellite imagery provides almost 40% of the accuracy delivered by earth observation.
User Interface
We are committed to applying the best technology to improve our ability to manage clean energy assets. We work extensively with the optimisation and design of solar and storage assets. The work that OCF is doing has direct, real-world implications for those assets and we’re very supportive and keen to be a potential user.

Phil Robinson, Co-founder
Habitat Energy
Results

- Easy to use forecasts updating in real-time
- Engaged users
- Open approach guarantees continuous improvement
Thank You!

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