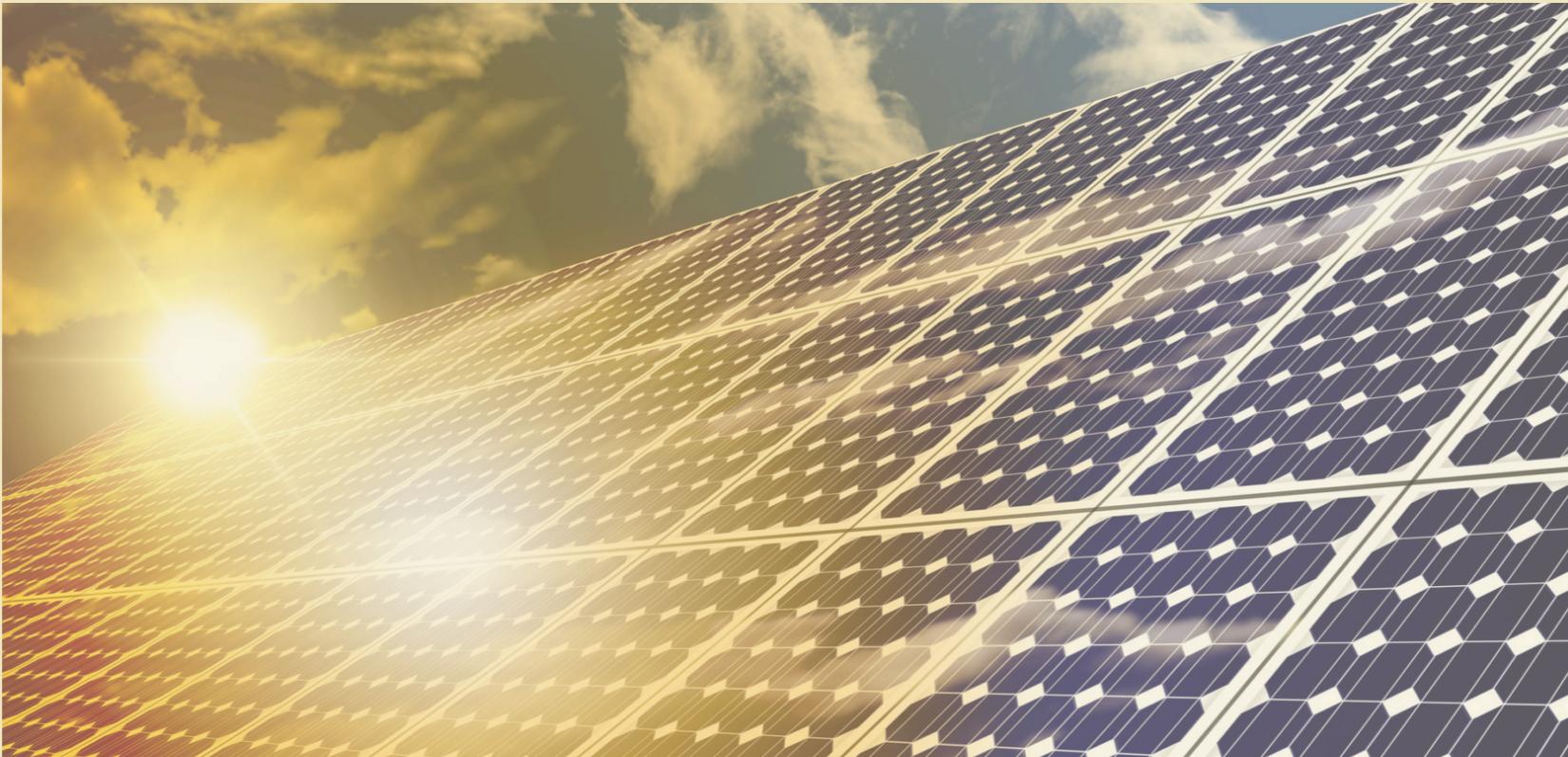


# A simple app to gauge solar panel prices



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# Use Case

- ENFSolar.com is a comprehensive online directory of solar energy products and companies
- They offer a large database of solar panels for businesses (B2B) and private buyers
- **Problem:** the website only lists individual products. There is no tool to get an overview of what prices to expect for a given type of solar panel
- **Solution:** an app that uses a ML algorithm to predict the most likely price given the desired technical specifications

# Data

The screenshot shows a user interface for comparing solar panels. At the top, there are filters for 'By Series', 'By Model', 'Euro (EUR)', and a search bar. Below this, two panels are listed:

- Series: M10 144cells 525-550w Mono** by Sunlike Solar:
  - Type: Monocrystalline
  - Panel Efficiency: 20.31 ~ 21.28 %
  - Power Range: 525 ~ 550 Wp
  - Weight: 28.5 kg
  - Region: China
  - Panel Dimension (H/W/D): 2279x1134x35 mm
  - Notes: Positive power tolerance of 0-3% improves system performance, Industry leading Module efficiency: Max efficiency 22%, Tested up to 5,400 Pa for Maximum load resistance.
- Series: SS8-72HS 525-550M** by Solarspace:
  - Type: PERC
  - Panel Efficiency: 20.3 ~ 21.3 %
  - Power Range: 525 ~ 550 Wp
  - Weight: 28.6 kg
  - Region: China
  - Panel Dimension (H/W/D): 2279x1134x35 mm
  - Notes: 10-busbar solar cell improves the efficiency of modules by decreasing the distance.

	efficiency_percent	power_wp	dimension_sqm	weight_kg	price_euro	brand	panel_type	region
9	20.58	450.0	2.186080	24.0	0.270	Iberian Solar	PERC	Spain
14	21.30	550.0	2.585530	28.0	0.271	SpolarPV	Monocrystalline	China
30	21.30	415.0	1.952748	21.5	0.228	Other	PERC	Other
38	20.80	450.0	2.165940	23.9	0.256	Ring Solar	Monocrystalline	China
52	21.50	455.0	2.173572	NaN	0.207	Einnova Solarline	Monocrystalline	China
68	21.32	545.0	2.556048	28.4	0.276	Austa Energy	Monocrystalline	China
75	14.90	100.0	0.648000	5.8	0.177	Other	Monocrystalline	China
96	20.50	400.0	1.952748	20.7	0.256	Ring Solar	Monocrystalline	China
106	21.20	475.0	2.244660	24.0	0.306	Other	Monocrystalline	Poland
109	17.70	100.0	0.637000	7.3	0.321	Fortunes Solar	Monocrystalline	China

step 1

- webscraping
- preprocessing and EDA

step 2

- modeling
- build streamlit app

# Modeling

## Numerical and Categorical Features:

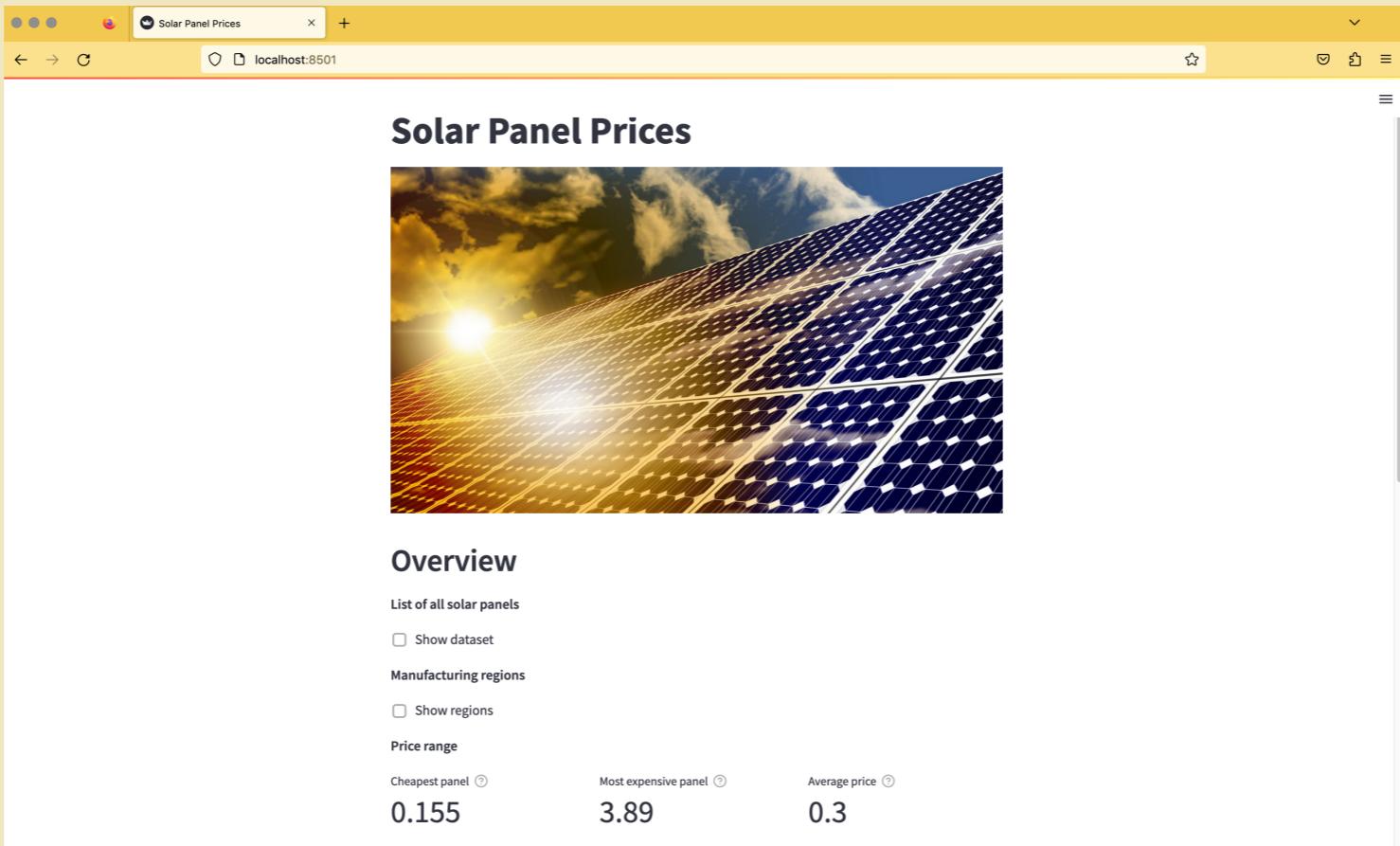
- Efficiency (power/surface)
- Weight
- Panel Type
- Brand
- Region

## Random Forest Regressor

- Price as target
- Accuracy on test set: 0.9
- Use full dataset to train before deploying app

# Streamlit App

- Use pre-trained model loaded as pickle file
- Display price range and average price
- User interface with drop-down menu to chose specifications and get expected price



# Thank you!

- Thanks to Leon Johnson!
- Data was scraped from ENFSolar.com

[https://github.com/Ytroa/predictor\\_app](https://github.com/Ytroa/predictor_app)