

Create **UI for ML models** directly from Notebook

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MLinPL Conference, Warsaw 2023

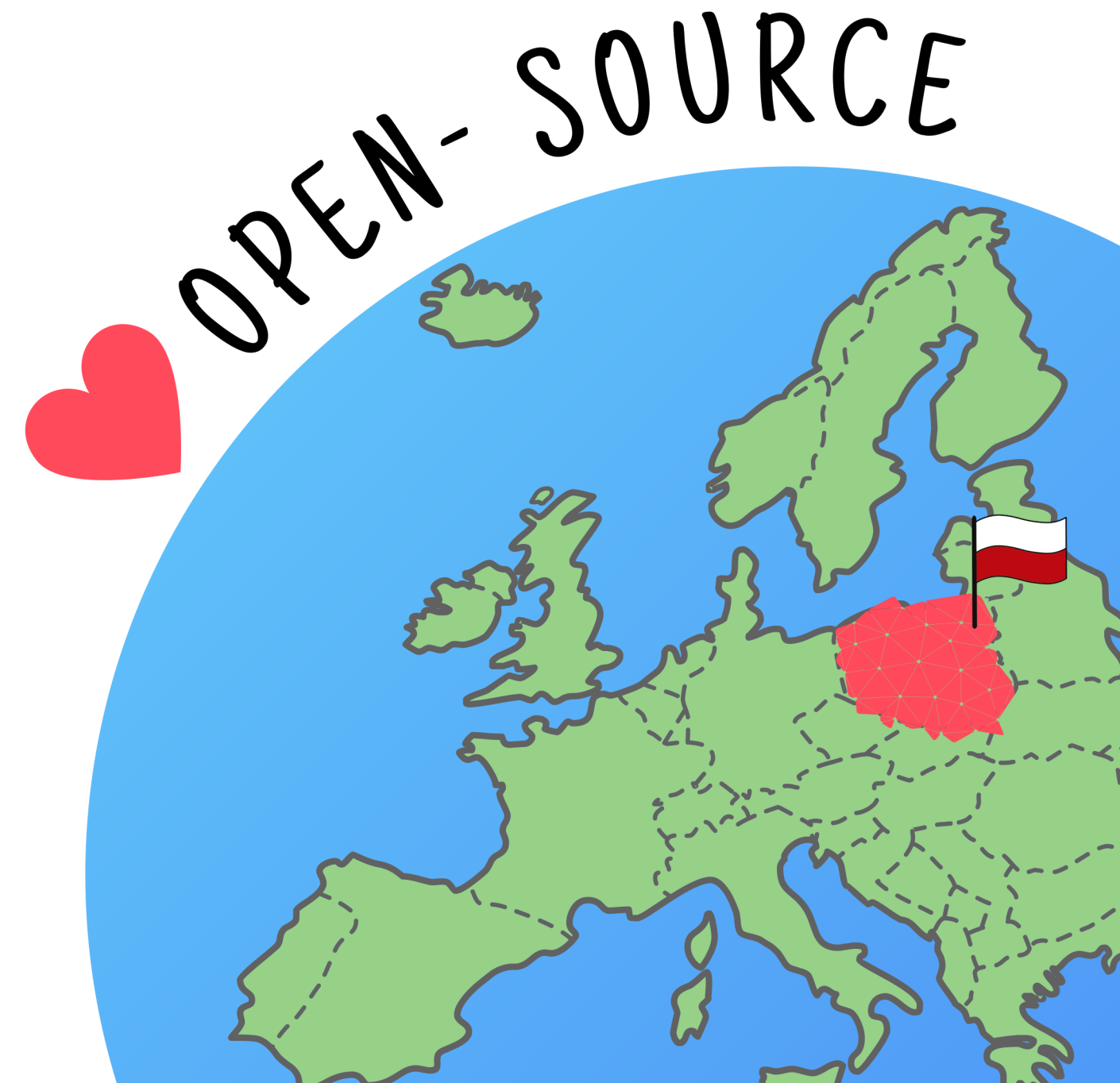


Data Science Tools

since 2016'

 Based in Poland

Our mission is:
make data science accessible,
transparent, and efficient.



TOOLS



MLJAR AutoML builds a complete Machine Learning Pipeline. It offers:

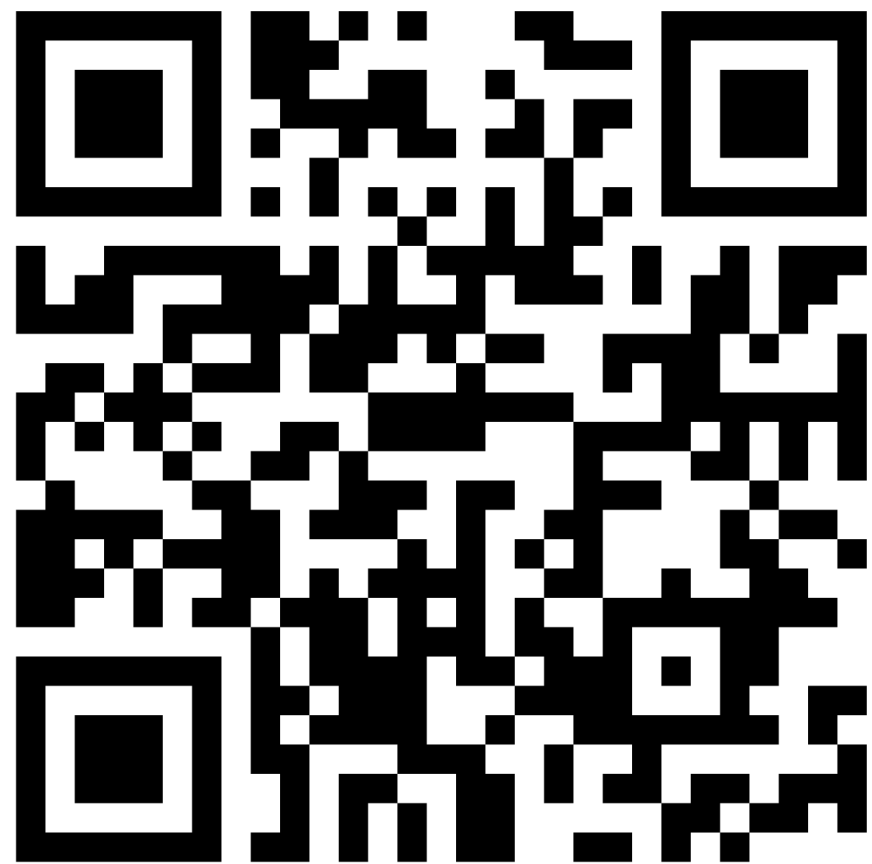
- advanced feature engineering
- algorithms selection and tuning
- automatic documentation
- ML explanations



Mercury is a web framework for converting Python Notebooks into interactive web applications



AutoML



- ★ open-source
- ★ **86 citations** in research papers
- ★ around **1 million** downloads
- ★ works with **Python** with versions 3.8, 3.9, 3.10, 3.11
- ★ **MIT** license

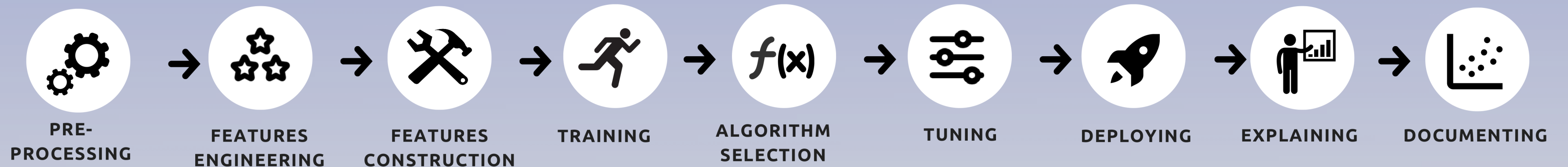
HOW IT WORKS

mljar-supervised

one Python package that includes



MACHINE LEARNING PIPELINE - STAGES AUTOMATED WITH AUTOML



INPUT DATA FILE

Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Survived
3	Braund, Mr. Owen Harris	male	22	1	0	A/5 21171	7.25		0
1	Cummings, Mrs. John Bradley (Florence Briggs Thayer)	female	38	1	0	PC 17599	71.2833	C85	1
3	Heikkinen, Miss. Laina	female	26	0	0	STON/O2. 3101282	7.925		1
1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35	1	0	113803	53.1	C123	1
3	Allen, Mr. William Henry	male	35	0	0	373450	8.05		0
3	Moran, Mr. James	male		0	0	330877	8.4583		0
1	McCarthy, Mr. Timothy J	male	54	0	0	17463	51.8625	E46	0
3	Palsson, Master. Gosta Leonard	male	2	3	1	349909	21.075		0
3	Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg)	female	27	0	2	347742			
2	Nasser, Mrs. Nicholas (Adele Achem)	female	14	1	0	237736			
3	Sandstrom, Miss. Marguerite Rut	female	4	1	1	PP 9549			
1	Bonnell, Miss. Elizabeth	female	58	0	0	113783			
3	Saunderscock, Mr. William Henry	male	20	0	0	A/5. 2151	8.05		0
3	Andersson, Mr. Anders Johan	male	39	1	5	347082	31.275		0
3	Vestrom, Miss. Hulda Amanda Adolfina	female	14	0	0	350406	7.8542		0
2	Hewlett, Mrs. (Mary D Kingcome)	female	55	0	0	248706	16		1
3	Rice, Master. Eugene	male	2	4	1	382652	29.125		0
2	Williams, Mr. Charles Eugene	male	0	0	0	244373	13		1
3	Vander Planke, Mrs. Julius (Emelia Maria Vandemoortele)	female	31	1	0	345763	18		0
3	Masseianni, Mrs. Fatima	female		0	0	2649	7.225		1
2	Fynney, Mr. Joseph J	male	35	0	0	239865	26		0



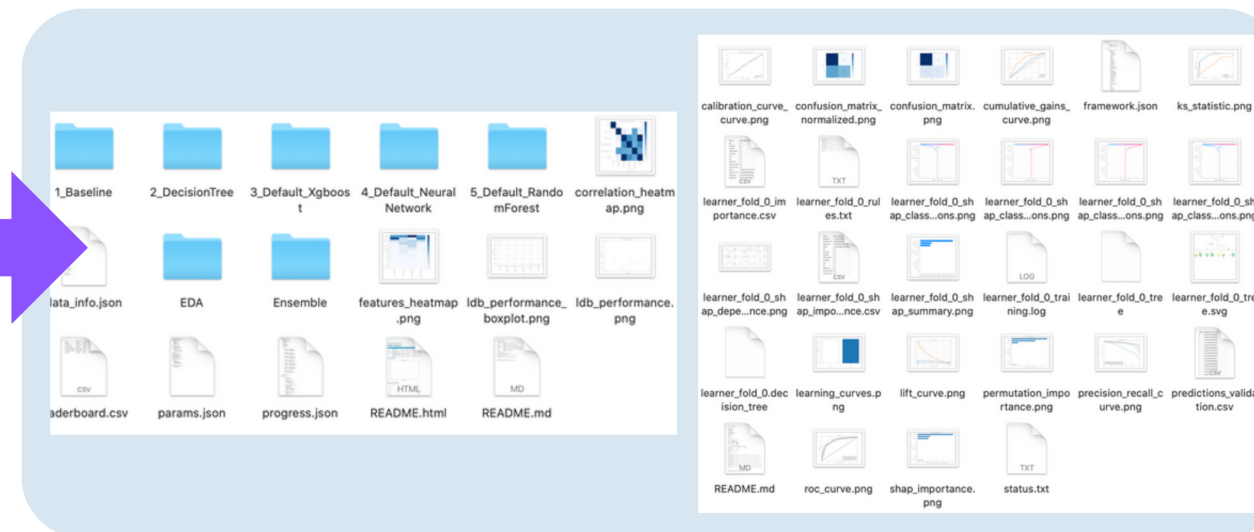
AutoML

with a few lines of code

```

>_
from supervised import AutoML
automl=AutoML()
automl.fit(X,y)
pred = automl.predict(X_test)
    
```

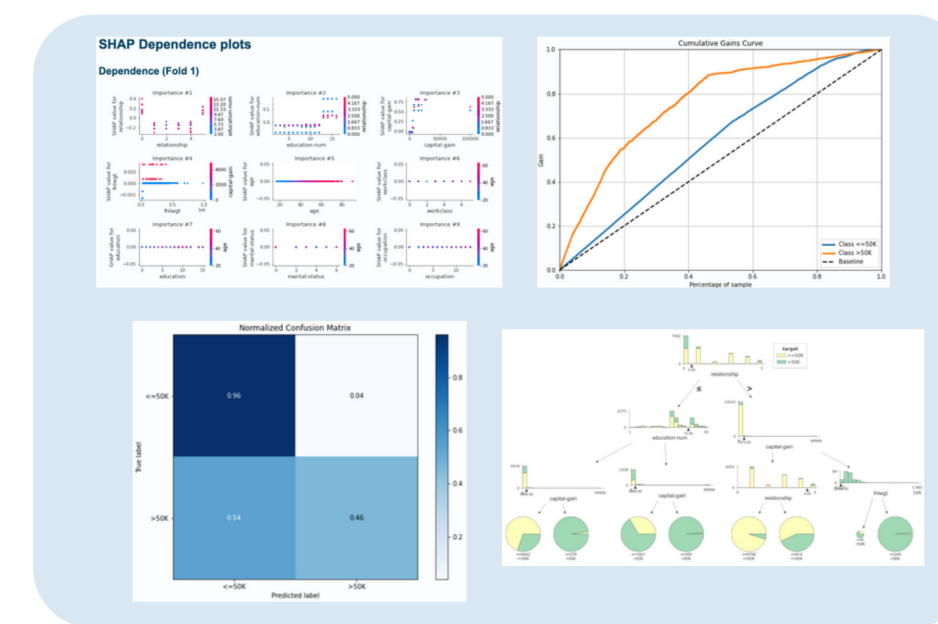
AUTO-SAVE & AUTO-DOC



MODEL LEADERBOARD

Best model	name	model_type	metric_type	metric_value	train_time
	1_Baseline	Baseline	logloss	0.555532	0.74
	2_DecisionTree	Decision Tree	logloss	0.376732	10.99
the best	3_Default_Xgboost	Xgboost	logloss	0.285863	7.57
	4_Default_NeuralNetwork	Neural Network	logloss	0.341575	6.63
	5_Default_RandomForest	Random Forest	logloss	0.353436	6.95
	Ensemble	Ensemble	logloss	0.285863	1.2

MANY VISUALIZATIONS



EXPLAIN YOUR WORK

**SHOW ML
PIPELINE
FOR BOSS**





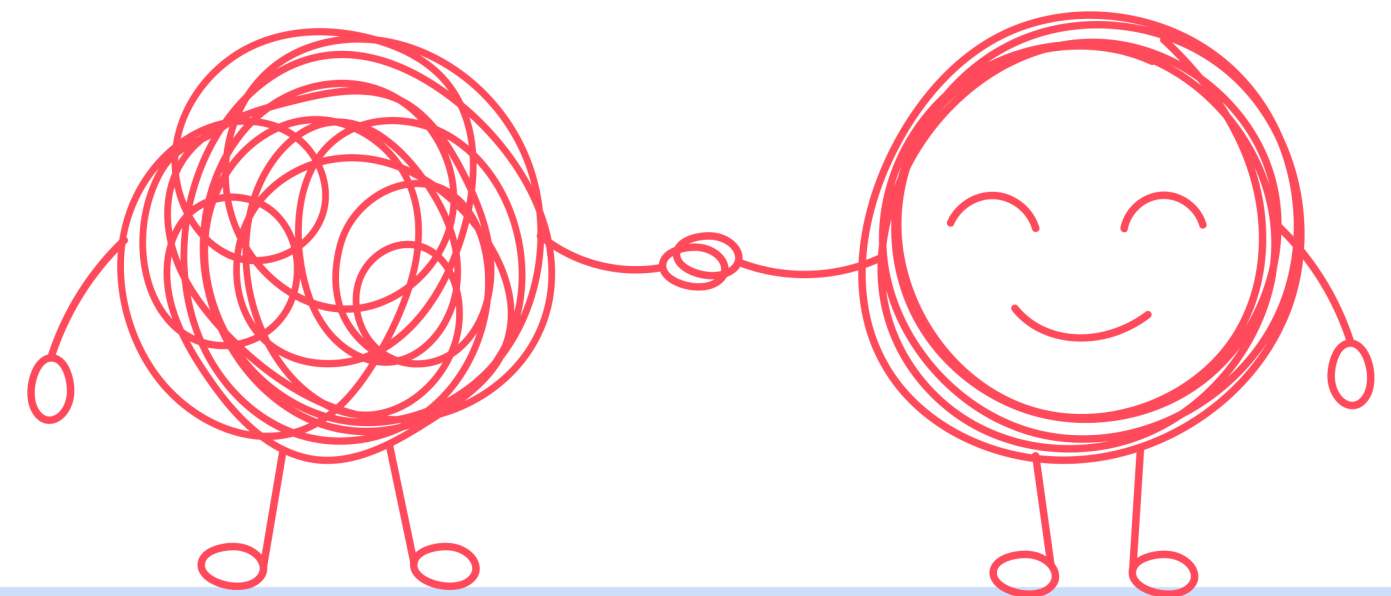
PROBLEM

You wrote perfect code, done a sophisticated analysis with complicated algorithms... and want to share it with **non-technical users**

PROBLEM TO SOLVE

Can't share notebooks with non-technical users

- PYTHON KNOWLEDGE
- INSTALLING & UPDATING PACKAGES
- SOMETIMES SPECIAL HARDWARE
- DATA ACCESS



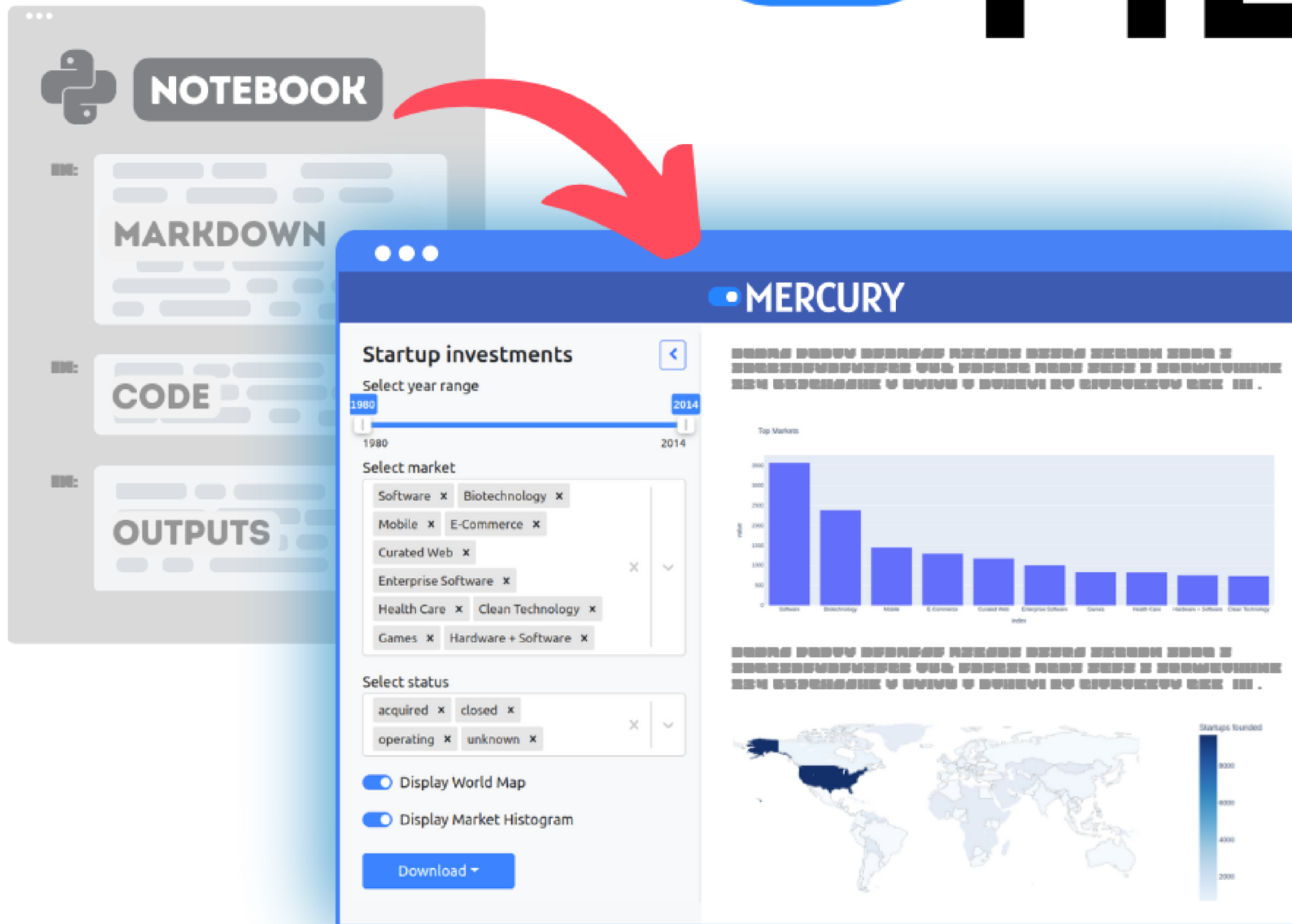


PROBLEM TO SOLVE

You can share your results:

- E-MAIL
- POWERPOINT
- REWRITE TO WEB APP

MERCURY



The image shows a web interface for Mercury, a framework for sharing notebooks. On the left, a faded notebook interface is visible with sections for 'NOTEBOOK', 'MARKDOWN', 'CODE', and 'OUTPUTS'. A red arrow points from this notebook to the Mercury dashboard. The dashboard has a blue header with the Mercury logo and title. The main content area is titled 'Startup investments' and includes a 'Select year range' slider from 1980 to 2014. Below this is a 'Select market' section with various tags like 'Software', 'Biotechnology', 'Mobile', 'E-Commerce', 'Curated Web', 'Enterprise Software', 'Health Care', 'Clean Technology', 'Games', and 'Hardware + Software'. A 'Select status' section includes tags for 'acquired', 'closed', 'operating', and 'unknown'. At the bottom of the filters are two toggle switches: 'Display World Map' and 'Display Market Histogram', and a 'Download' button. The right side of the dashboard features a 'Top Markets' bar chart, a world map, and a 'Startups founded' legend.

Framework for
sharing notebook

WHY IT IS DIFFERENT?

- NO CALLBACKS!
- NO LAYOUT WIDGETS

- SIMPLE
- APP FEATURES
- EASY DEPLOYMENT

The screenshot displays the MERCURY dashboard interface. At the top, there is a dark header with the MERCURY logo. The main content area is a grid of nine interactive widgets. Each widget typically includes a title, a brief description, a code editor with Python or JavaScript code, and a visual representation of the data (such as a table, scatter plot, or bar chart). The widgets shown are: 1. 'Reddit/Data Science Salary Analysis 2021' (table), 2. 'Reddit/Data Science Salary Analysis 2021 (with code)' (code editor), 3. 'Movies Explorer' (scatter plot), 4. 'Movies Explorer with code' (code editor), 5. 'Countries Life Expectancy and GDP' (bar chart), and 6. 'Countries Life Expectancy and GDP with code' (code editor). Each widget has an 'Open' button with a right-pointing arrow. The interface is clean and modern, emphasizing ease of use and integration of code with data visualization.

```
[1]: import mercury as mr
```

```
[2]: greetings = mr.Select(label="Greetings", value="Hello",  
                           choices=["Hello", "Cześć"])
```

Greetings 

```
[3]: city = mr.Text(label="City", value="Warsaw")
```

City

```
[4]: year = mr.Slider(label="Year", min=2020, max=2025, value=2023)
```

Year  2023

```
[5]: mr.Markdown(f"# 🙌 {greetings.value} {city.value} {year.value}!")
```

 **Hello Warsaw 2023!**

starter



Greetings

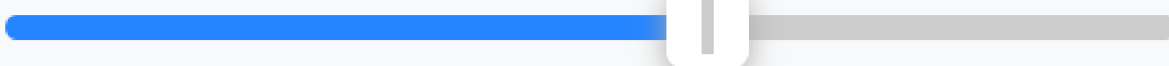
Hello | 

City

Warsaw

Year

2023




2020

2025

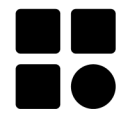


 Download 

 Share

 Hello Warsaw 2023!

FEATURES



multiple apps

Share as many notebooks as you want.



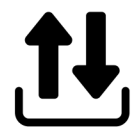
authentication

Decide with whom to share your notebooks.



export to PDF or HTML

Users can easily export the executed notebook as a PDF or HTML



output files

Produce files in notebook and make the downloadable for users



embedding

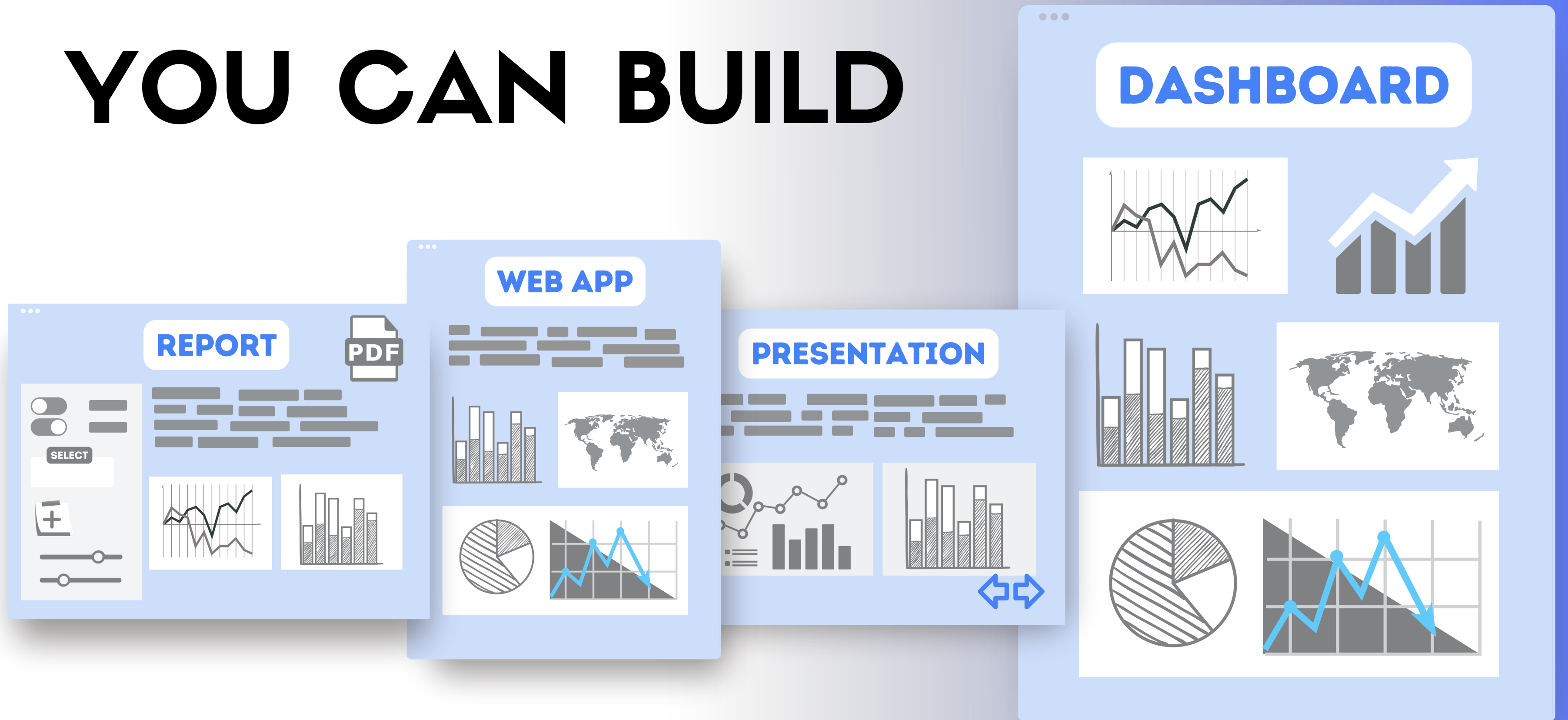
Run notebook with Mercury and embed it on any website



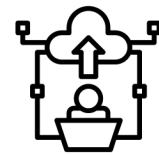
hide or show code

Decide whether you want to show or hide code in the app

YOU CAN BUILD



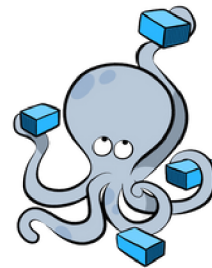
DEPLOYING



self-hosted

with

Docker-Compose



Ngrok

ngrok

Hugging Face



self-hosted

Commercial

Deployment dashboard to manage notebooks and users, and:

- User analytics
- Private forks
- Style customization
- Email support



mercury cloud

Create your site

- choose from many domains & set your custom domain:

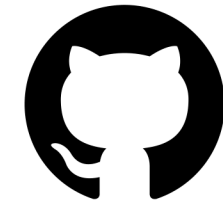
YOUR NAME.isDataScientist.com
.PreviewReport.com
.RunMercury.com
.DataInAdvance.com

- or use your custom domain

THANK YOU!



runmercury.com



github.com/mljar