

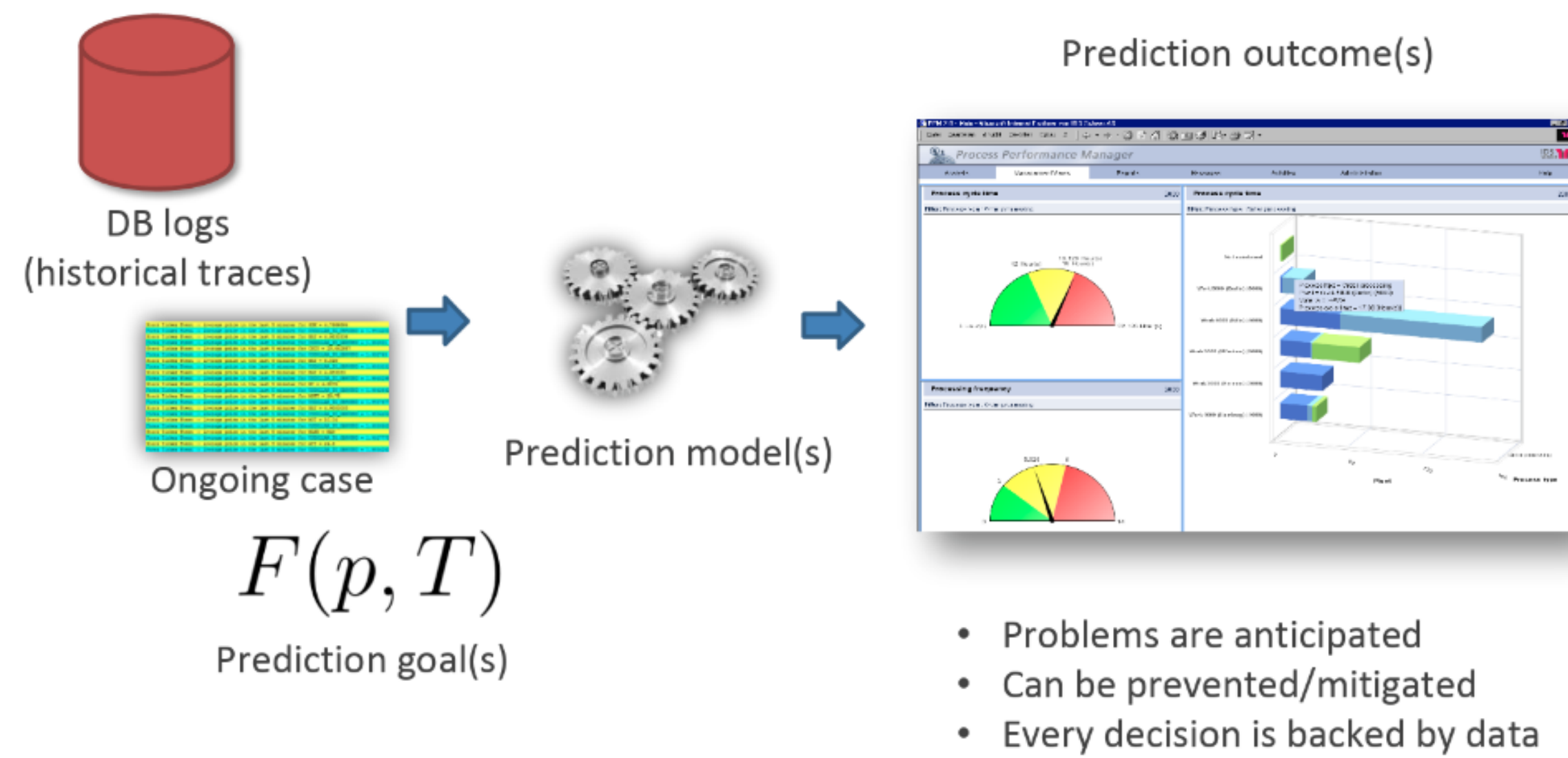
# NIRDIZATI – ANTICIPATE THE FUTURE *(by training better models!)*

Stanislav Mõškovski

*Supervised by Ilya Verenich, MSc*

Institute of Computer Science, University of Tartu

## Predictive process monitoring



## Problems

- Processes take longer than necessary
- Deadline violations
- Process errors occur
- Inefficient resource management

## Solution

- Predictive process monitoring
- Act before deviations happen
- Draw attention to potential problems
- Prioritize process instances

## Description

**Nirdizati Training** allows business process analysts to easily **upload** their event log, **train** predictive models for various prediction targets by using state-of-the-art machine learning algorithms, **visualize and compare** the results and then **export** the model for further predictions on a live event stream.

## Advantages

- Accessible via any modern web browser that supports JavaScript
- Simple and sleek UI
- All computations are done on the server side
- Parallel training jobs
- Model accuracy visualization and comparison
- Great variety of machine learning techniques and algorithms
- Highly configurable training process for expert users

## User interface

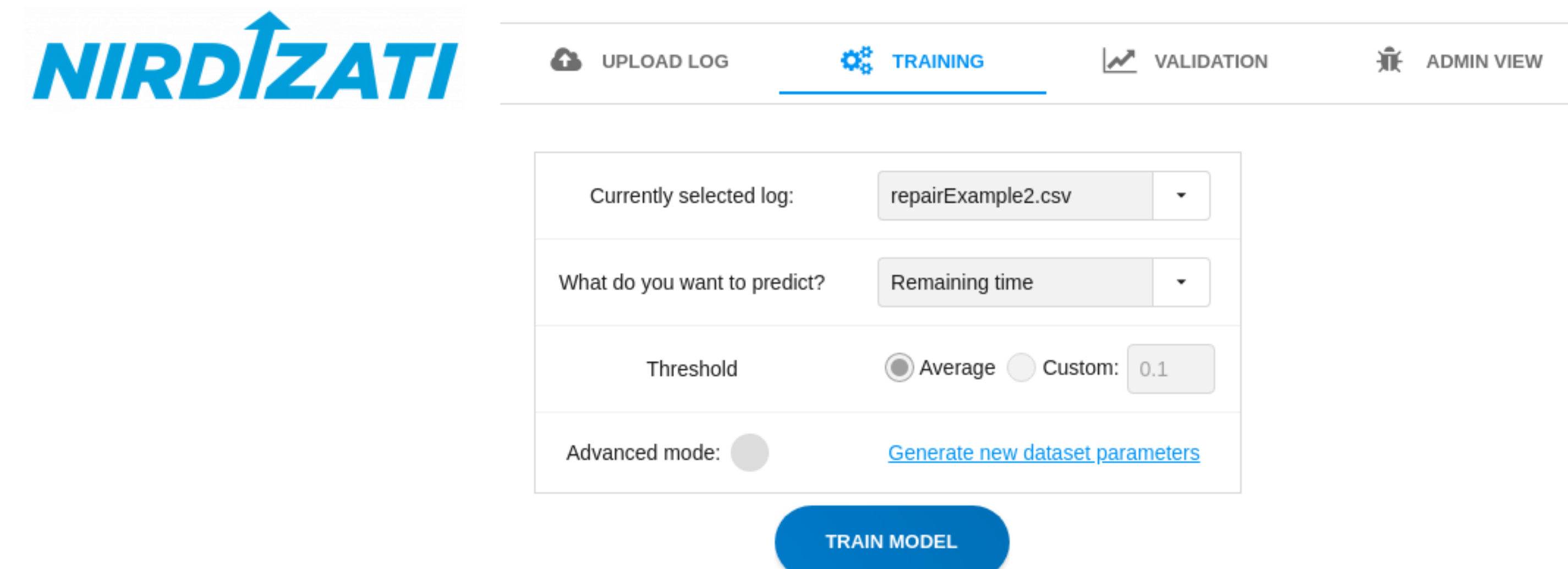


Fig. 2: Training view of Nirdizati Training component

LOG	TARGET	BUCKETING	ENCODING	METHOD	HYPERPA...	START TIME	ACCURACY
CreditRequiremen	Next activity	None	Frequency	XGBoost	?	2018-05-15 22:08:17	ACC: 1.0000
bpi12	Remaining time	None	Frequency	XGBoost	?	2018-05-09 17:09:55	MAE: 483094.4168
repairExample2	Remaining time	None	Frequency	XGBoost	?	2018-05-07 17:29:34	MAE: 0.0067
bpi12	Fast/Slow (Case duration)	Prefix length based	Index based	XGBoost	?	2018-05-06 22:06:35	ACC: 0.7060
bpi12	Fast/Slow (Case duration)	None	Combined	XGBoost	?	2018-05-06 22:06:21	ACC: 0.7033
bpi12	Next activity	Clustering	Combined	XGBoost	?	2018-05-06 22:05:51	ACC: 0.6447
bpi12	Next activity	None	Combined	XGBoost	?	2018-05-06 22:05:51	ACC: 0.6488
bpi12	Remaining time	None	Combined	Decision tree	?	2018-05-06 20:37:10	MAE: 501698.5189
bpi12	Remaining time	Clustering	Combined	XGBoost	?	2018-05-06 20:09:01	MAE: 487774.9826

Fig. 3: View of completed simulations, which allows sorting and grouping by various parameters.

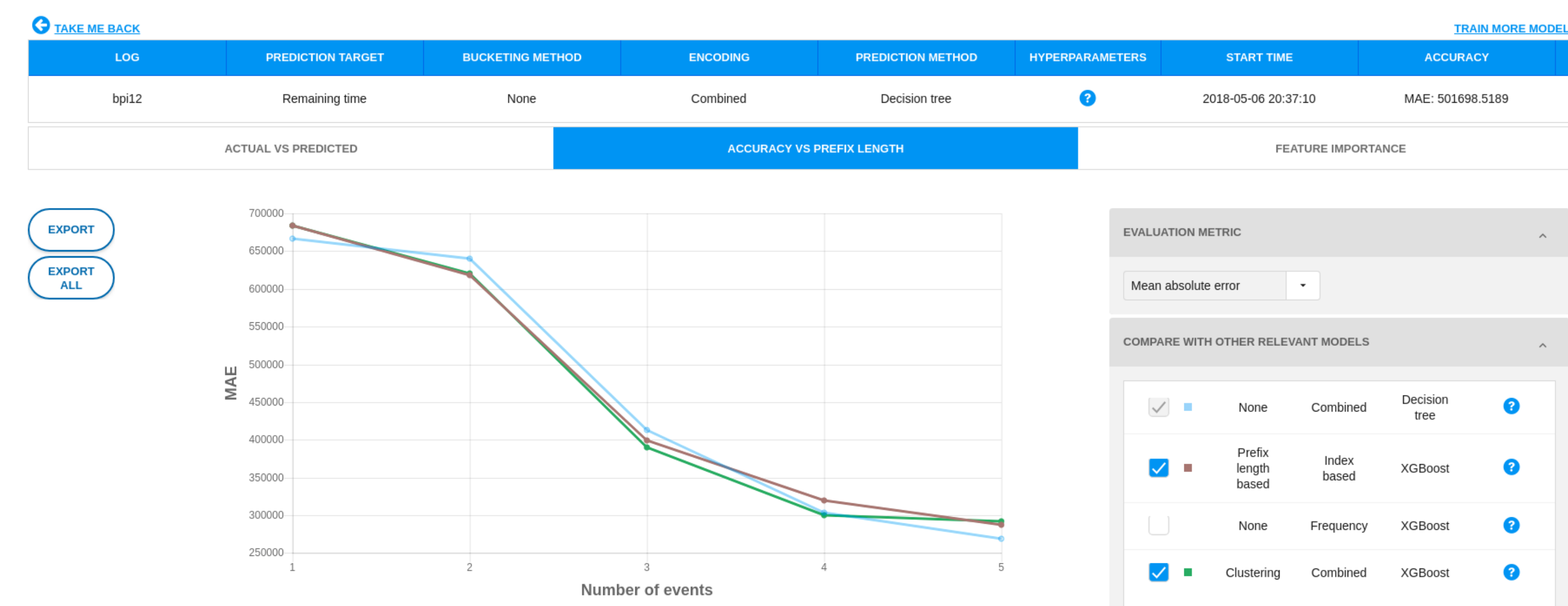


Fig. 4: Model evaluation view with model accuracy visualization

## Technical solution

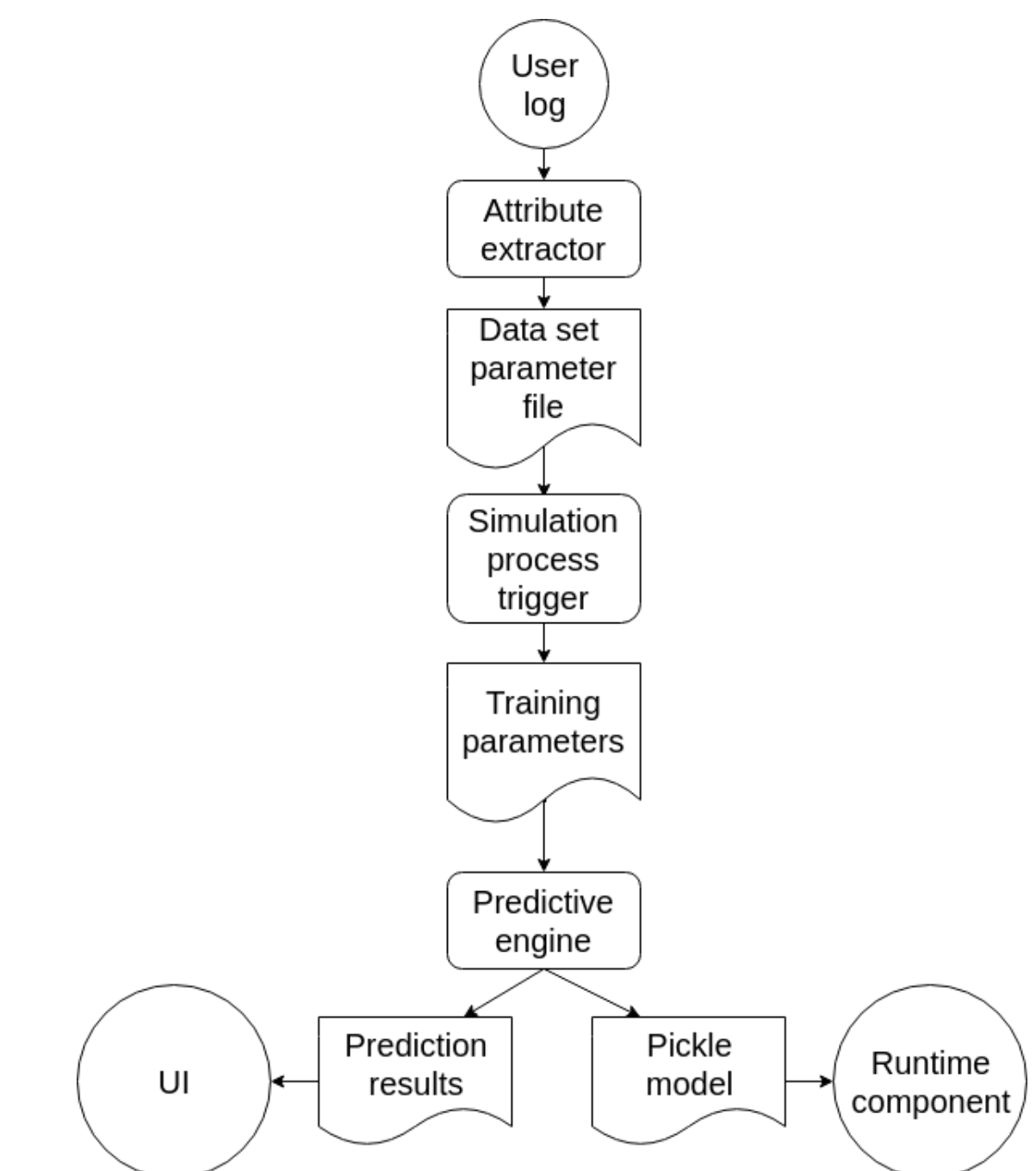


Fig. 5: Data flow of Nirdizati Training

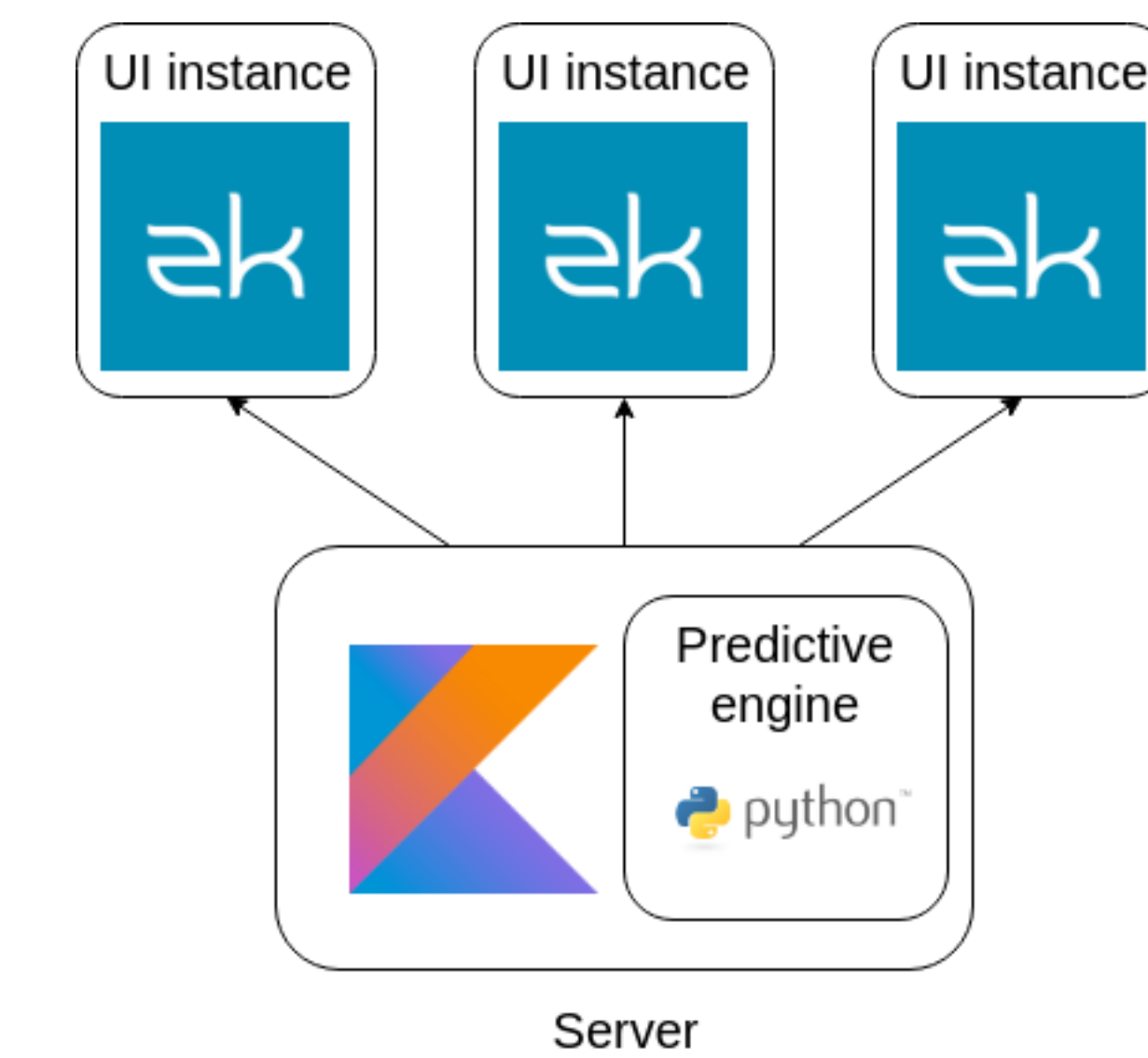


Fig. 6: Architecture of Nirdizati Training

## Links

- Live demo: <http://training.nirdizati.org/>
- Code: <https://github.com/Zukkari/nirdizati-training-ui>
- Landing: <http://nirdizati.org>
- Twitter: <https://twitter.com/nirdizati>

