

MLOps Zoomcamp: how to monitor ML models in production

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CTO Evidently AI

About me



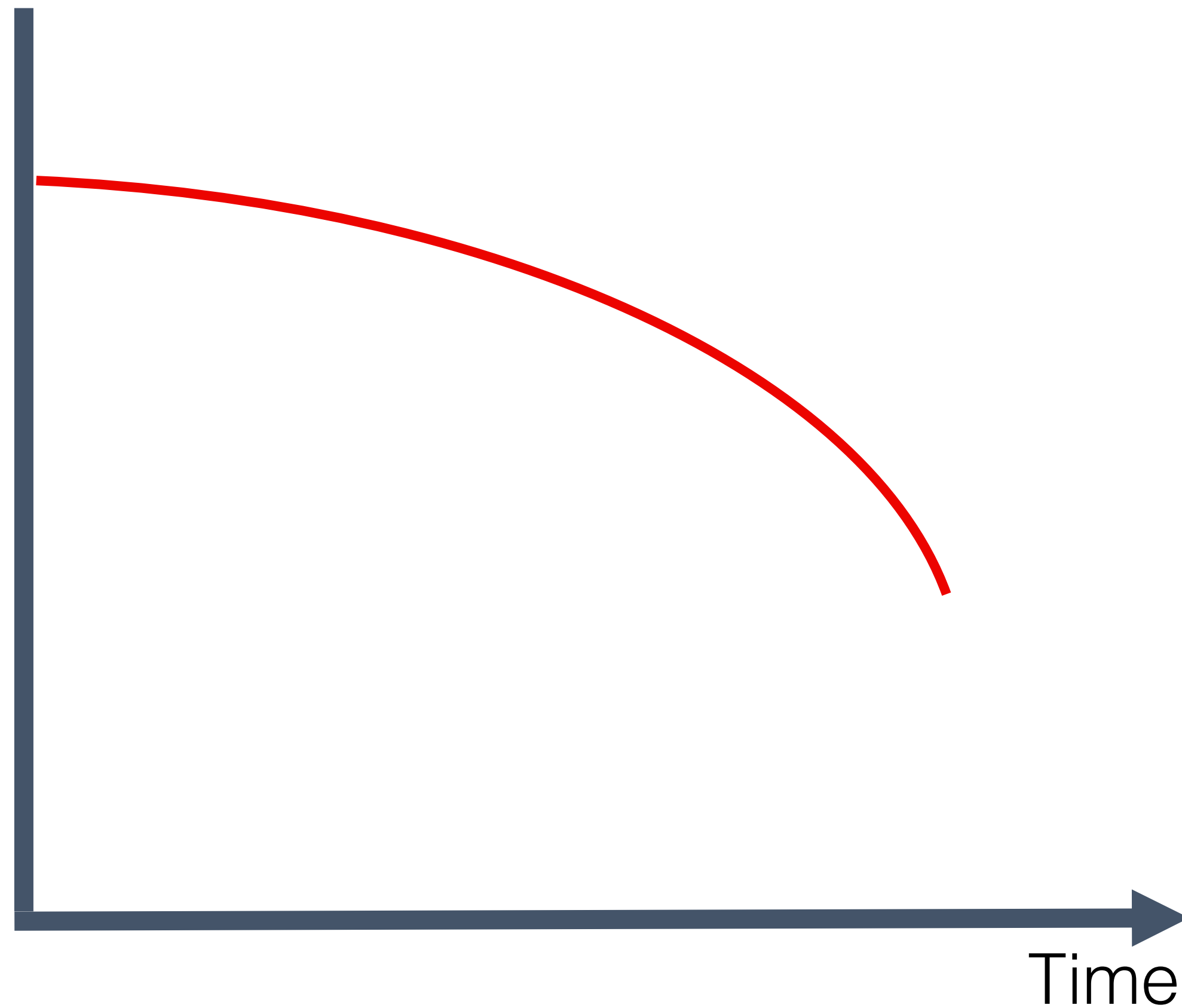
- Co-founder & CTO Evidently AI, open-source ML monitoring
- Ex Chief Data Scientist at Yandex Data Factory and Mechanica AI
- Co-founder of Data Mining in Action, largest offline data science course in Russia
- Co-author of two Coursera specializations in data science with > 100K students
- Lecturer at Harbour.Space University, GSOM MBA

50+ Industrial applications of machine learning

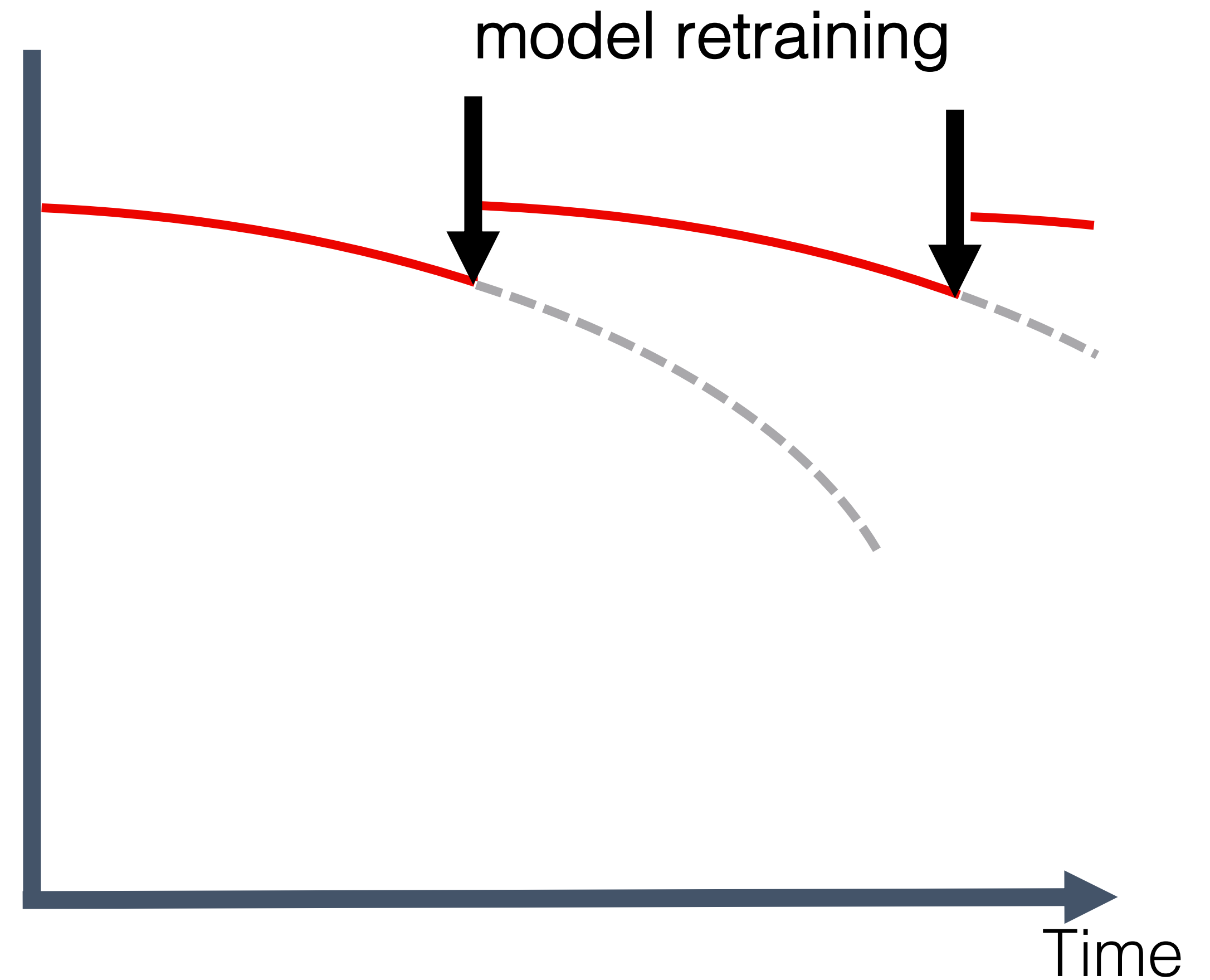


ML models degrade and need monitoring

Model accuracy

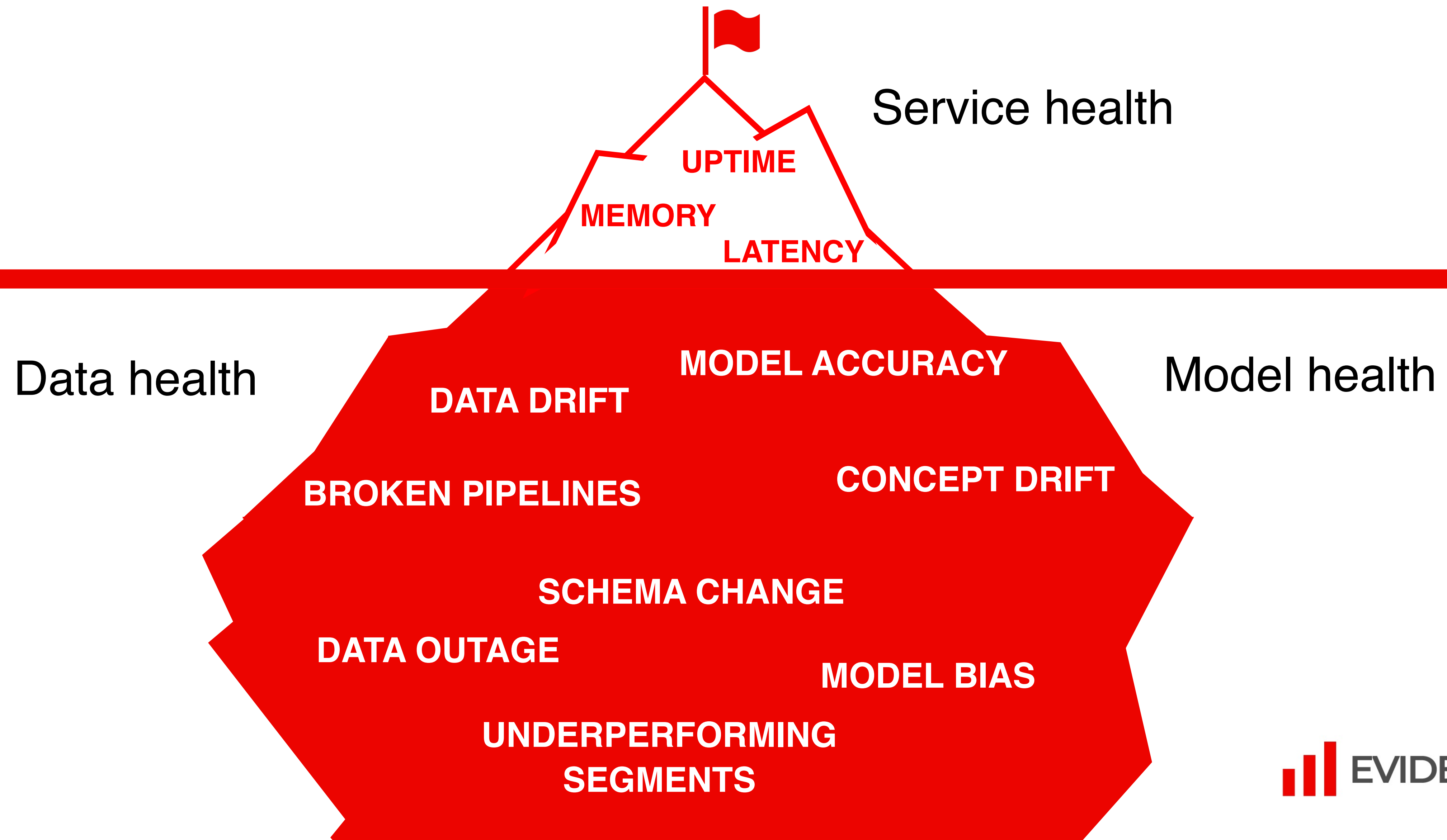


Model accuracy



How to prepare? Monitoring.

How is machine learning monitoring different?

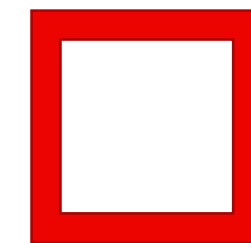


1.

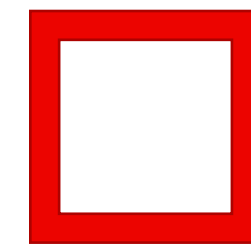
Does it work?



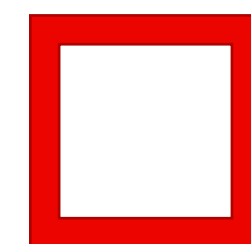
Service health



Model performance



Data quality and integrity



Data and concept drift

2.

How it
performs?

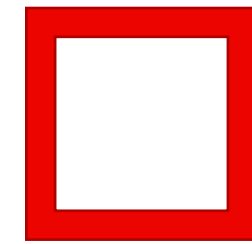
Did anything
break?



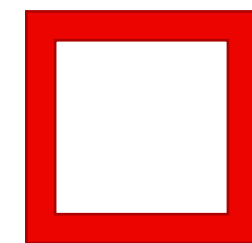
Service health



Model performance



Data quality and integrity



Data and concept drift

3.

Where it
breaks?

Where to dig
further?



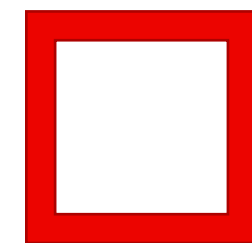
Service health



Model performance



Data quality and integrity



Data and concept drift

4.

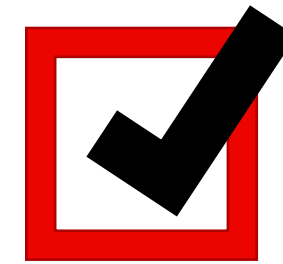
**Is the model
still relevant?**



Service health



Model performance



Data quality and integrity



Data and concept drift

Comprehensive monitoring: more things to look at



Service health



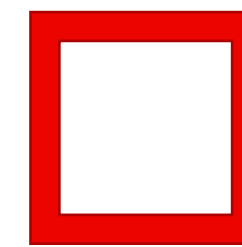
Model performance



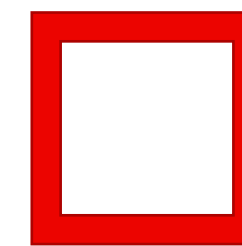
Data quality and integrity



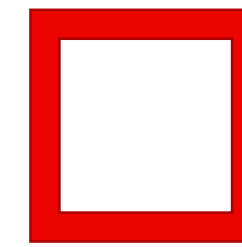
Data and concept drift



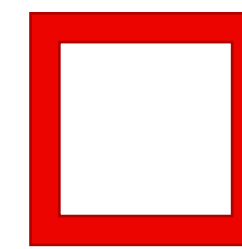
Performance by segment



Model bias / fairness



Outliers



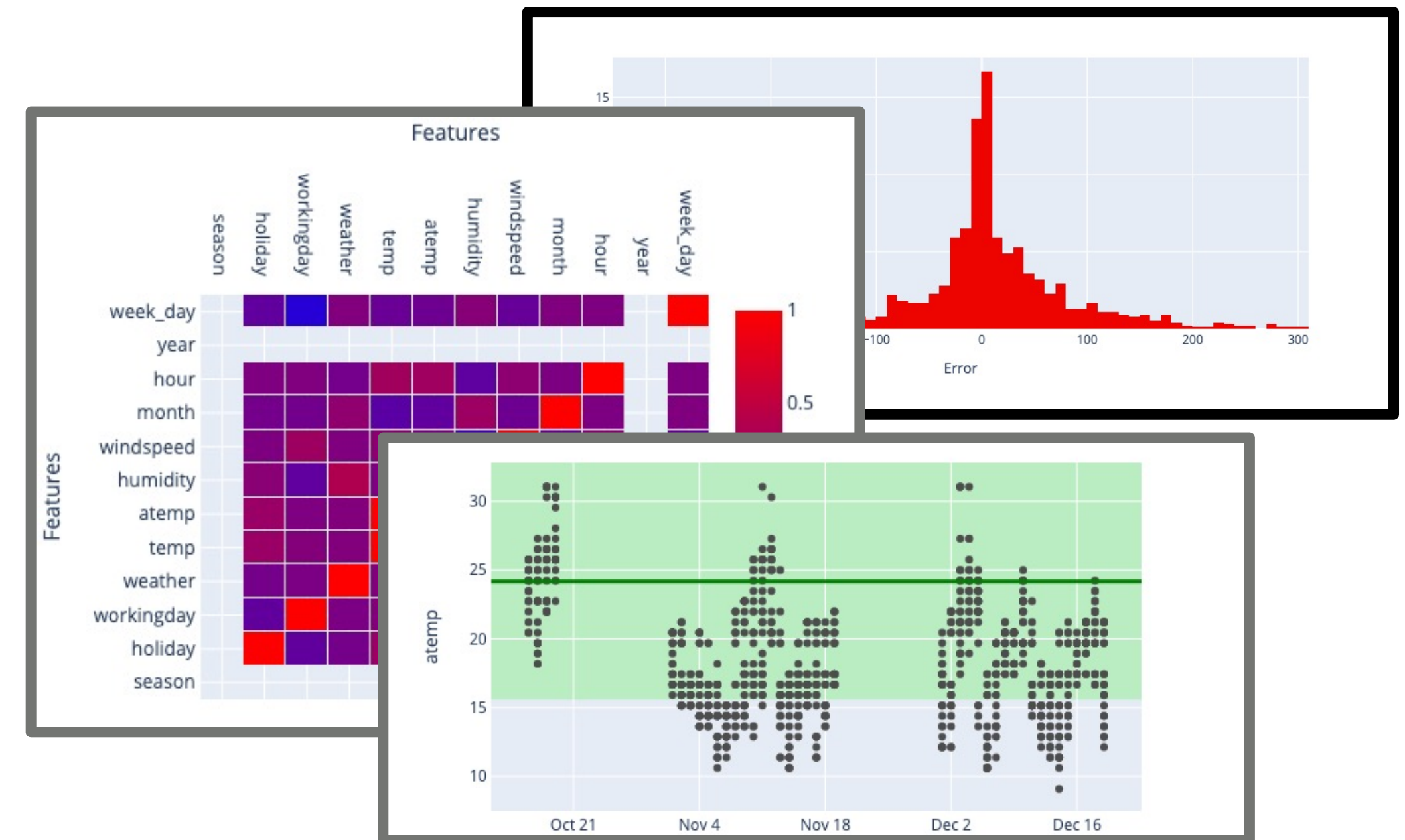
Explainability

Batch vs Online Serving Models

How to monitor?



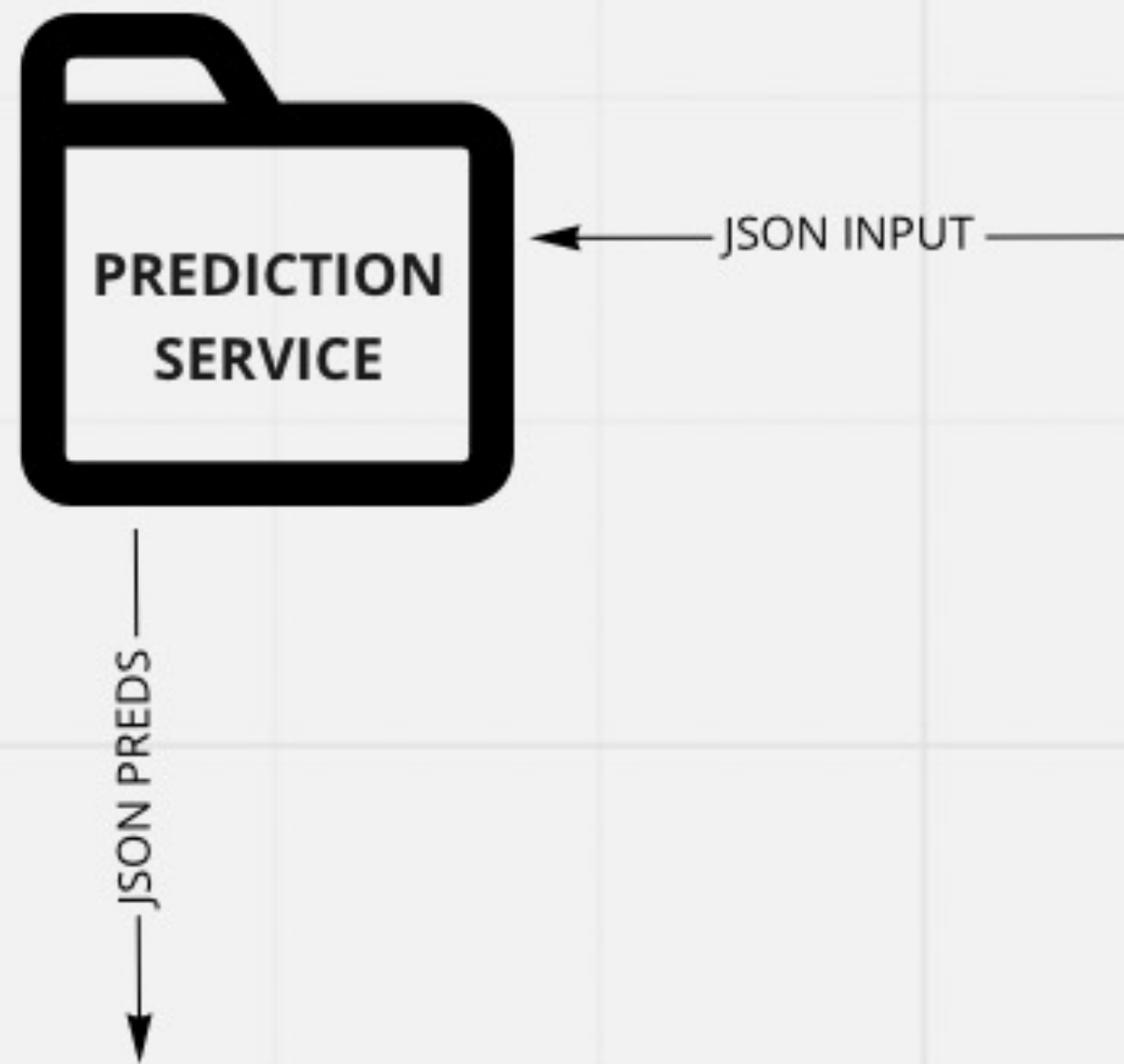
Add ML metrics to service health monitoring
(e.g. Prometheus/Grafana)



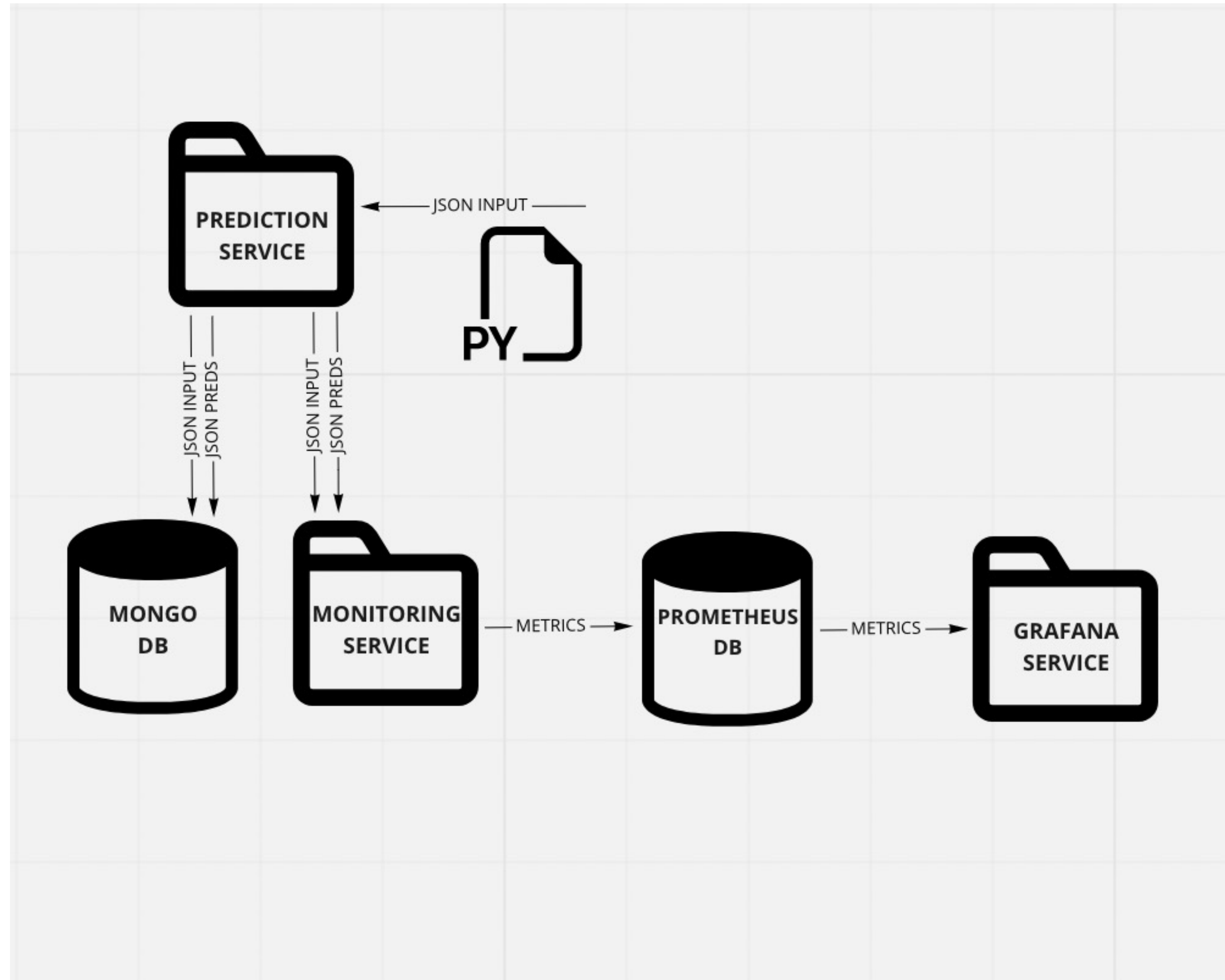
Build an ML-focused Dashboard(s)
(e.g. MongoDB/Grafana or BI tools Tableau, Looker)

Time to Practice!

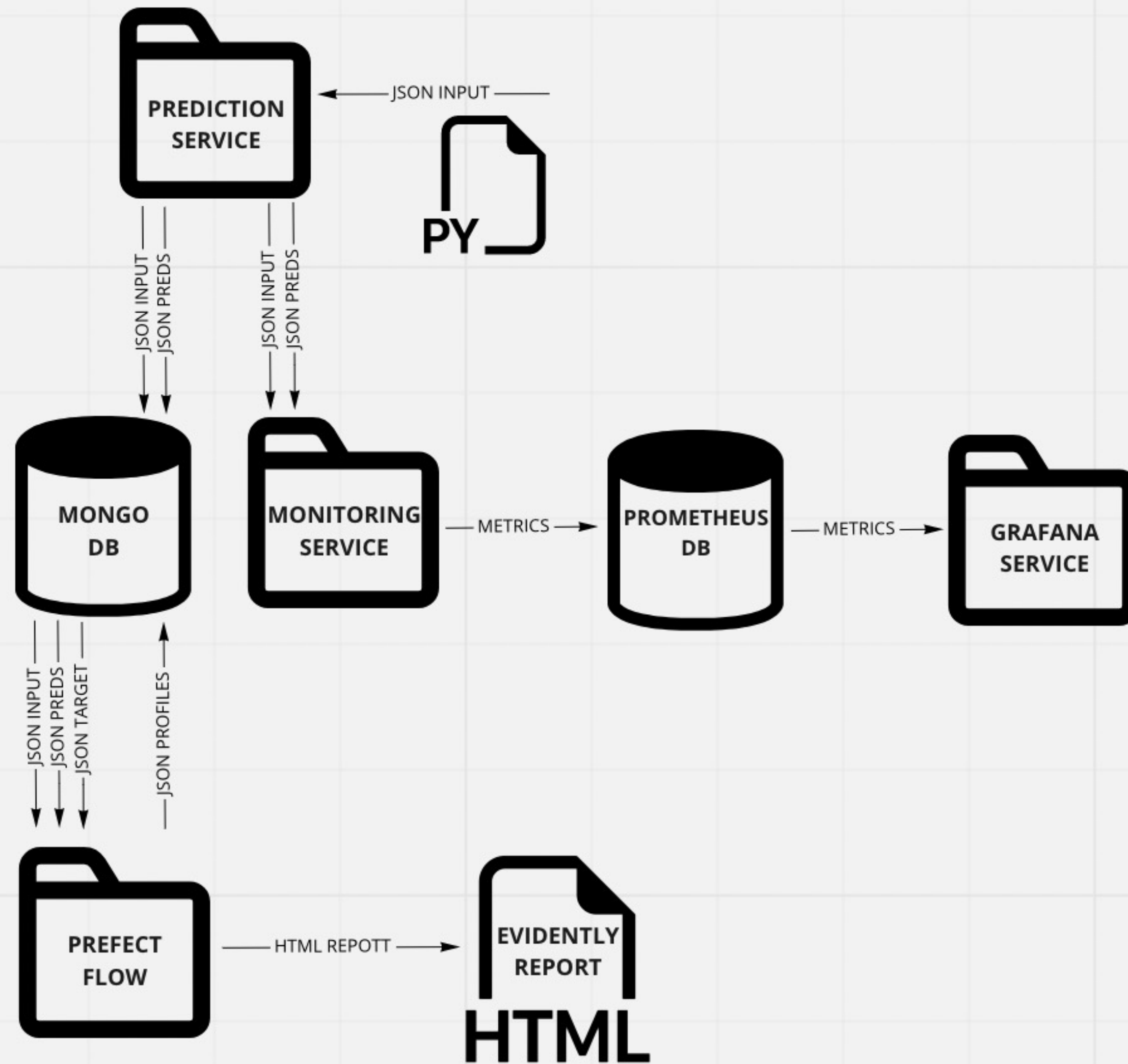
ML service



ML service + usage simulation + logging + online monitoring



ML service + usage simulation + logging + online monitoring + batch monitoring



ML service + usage simulation + logging + online monitoring + batch monitoring + container

