AI and ML Week

Modifying ML models when major events occur

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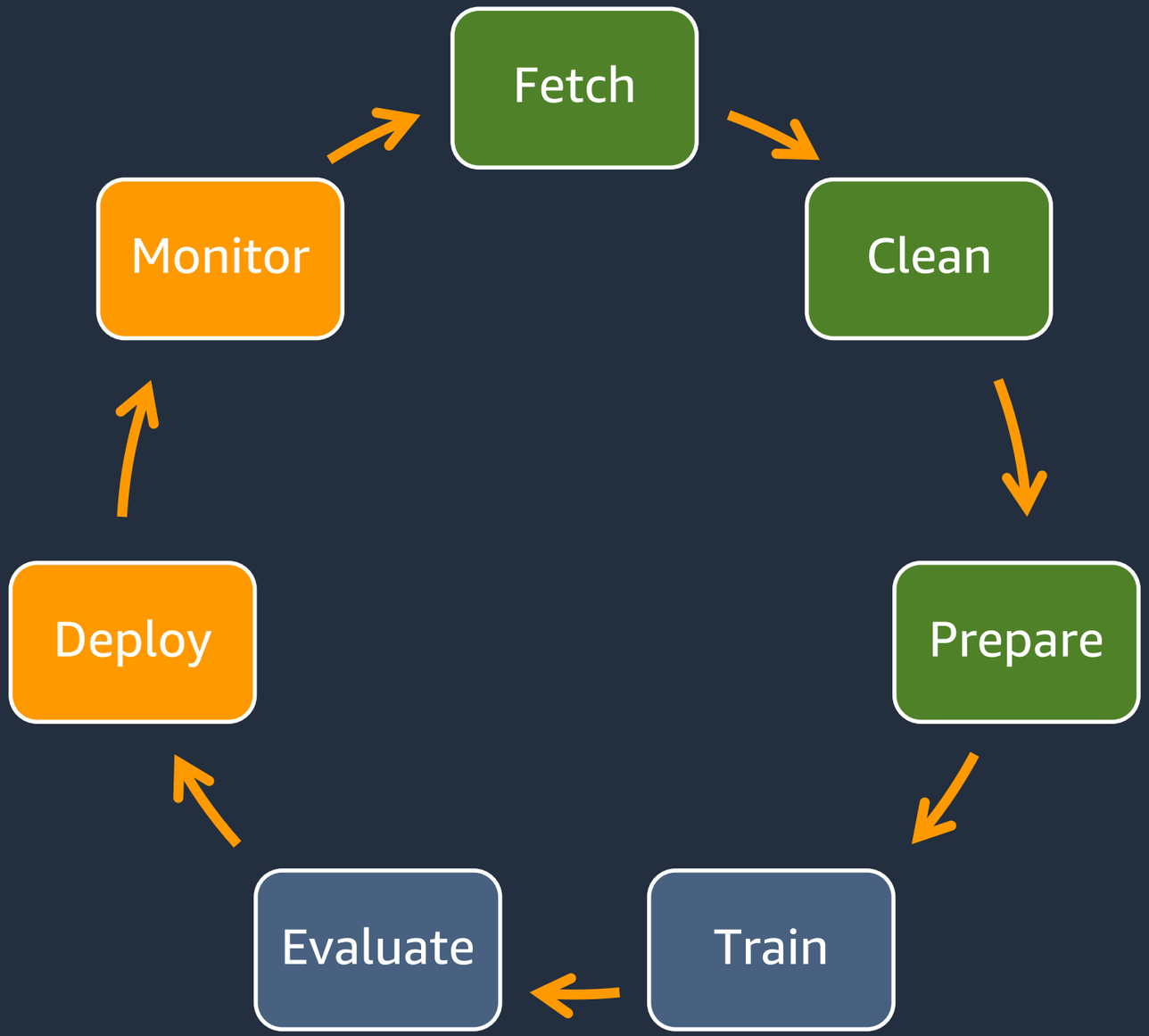
Agenda

- Problem statement and background
- Amazon SageMaker Model Monitor overview
- Implementing and visualizing model monitors
- Next steps

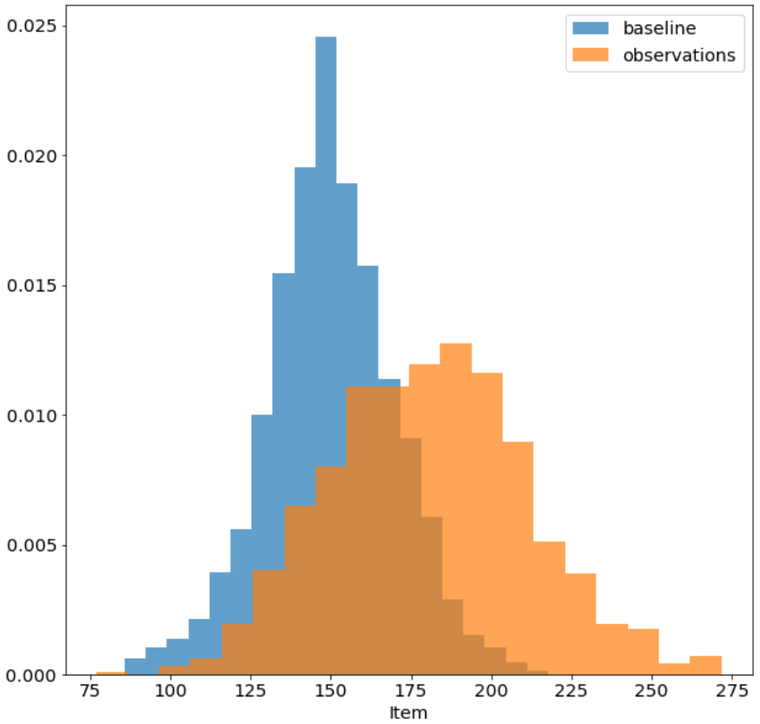
Machine learning lifecycle

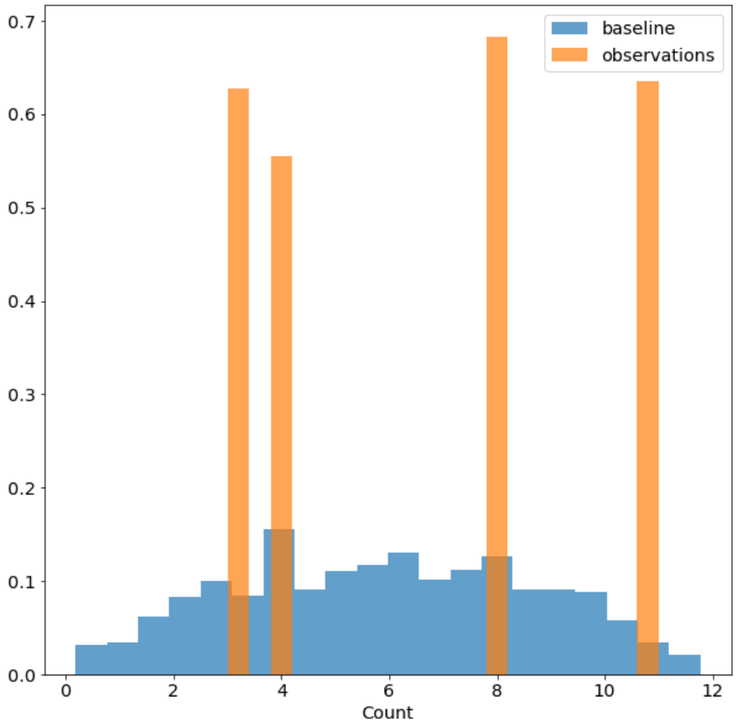


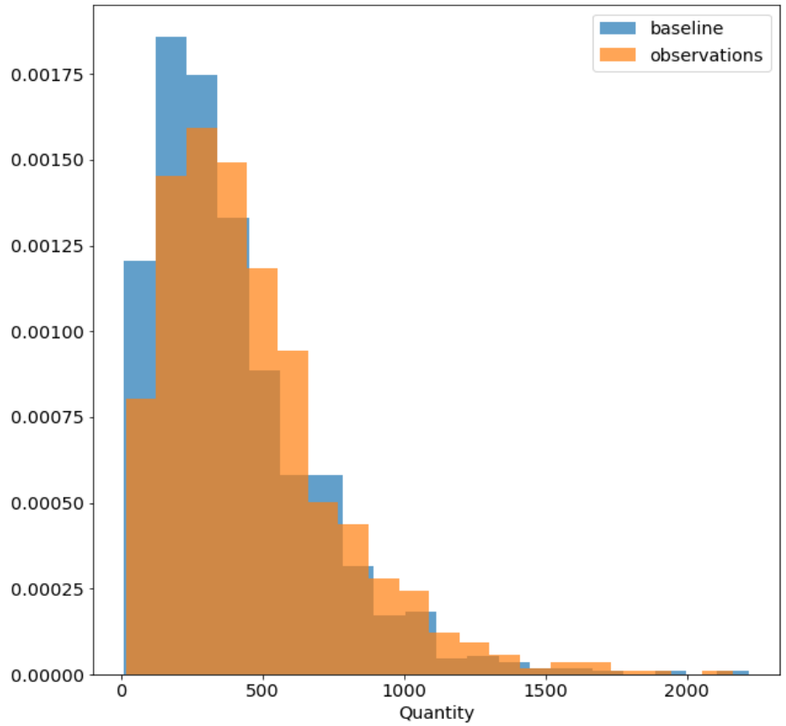
Model monitoring terminology

- Logging
- Inference
- Data drift
- Concept drift
- Serving system
- Alerting and thresholding

Data drift

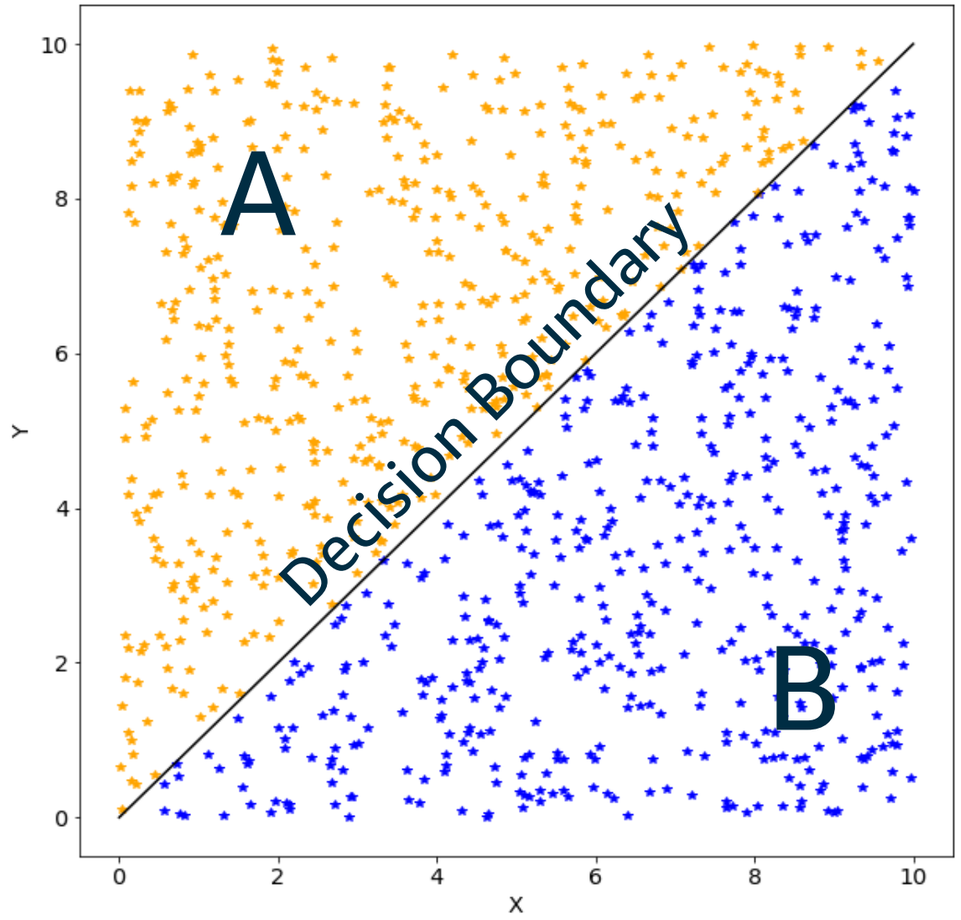


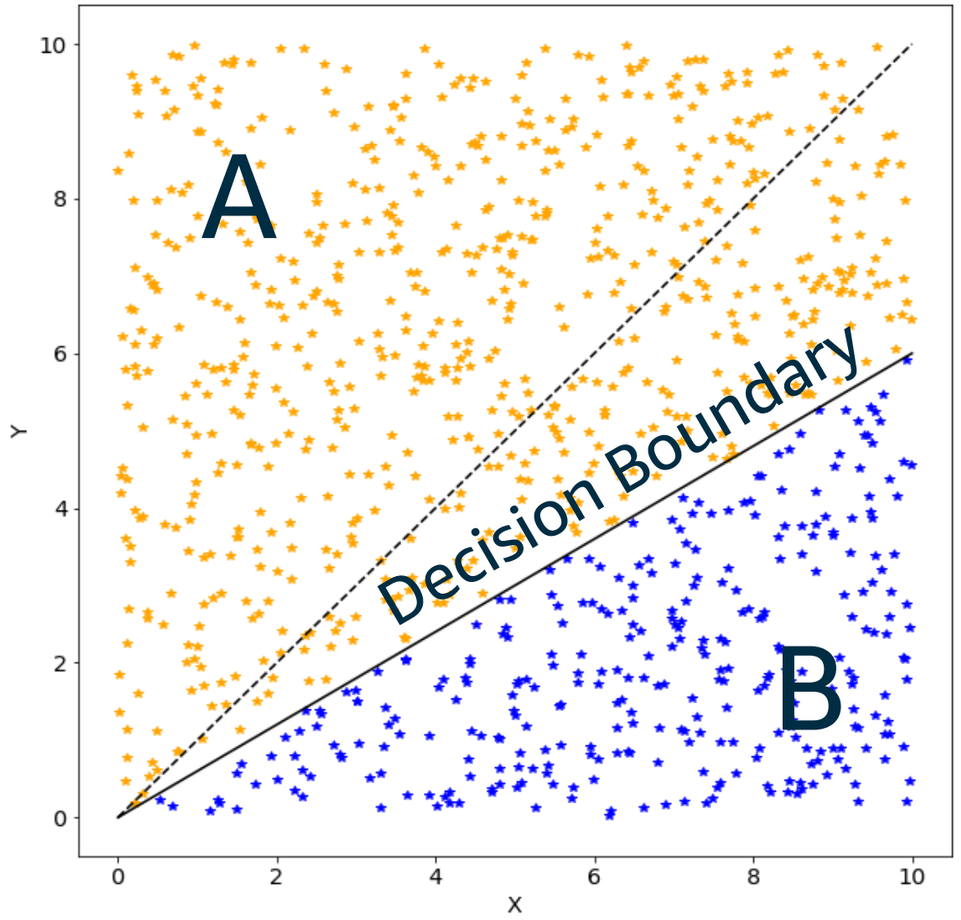




Is the model training and validation data representative of the live data being fed into the deployed model?

Concept drift

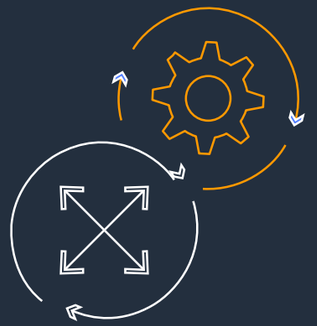




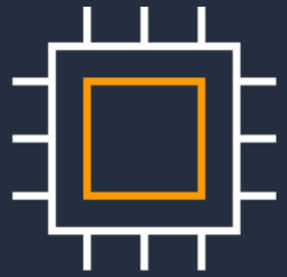
Serving system monitoring

Prediction demand

Prediction latency



Model age



Instance utilization

Number of errors

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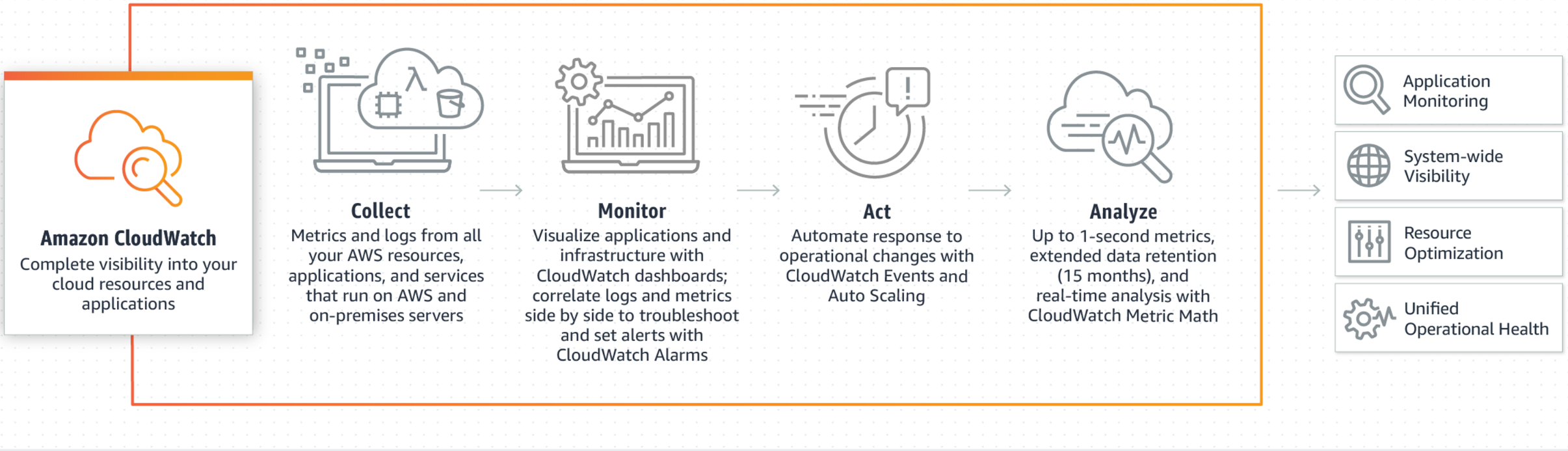
Alerting



Continue to monitor and iterate

Deploying a model is not the end – You need to continuously monitor models in production and iterate.

The real-world data may not look like the training data.

Concept drift due to divergence of data

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Model performance can change due to unknown factors

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Continuous monitoring involves tooling and expense

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Model monitoring is critical

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Introducing Amazon SageMaker Model Monitor
Continuous monitoring of models in production

Automatic data collection

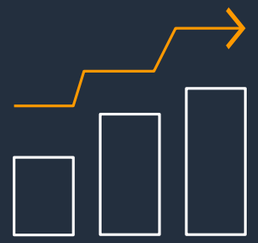
Data collected from endpoints is stored in Amazon S3

Continuous monitoring

Define a monitoring schedule and detect changes in quality against a pre-defined baseline

Flexibility with rules

Use built-in rules to detect data drift or write your own rules for custom analysis



Visual data analysis

See monitoring results, data statistics, and violation reports in Amazon SageMaker Studio; Analyze in Notebooks

CloudWatch Integration

Metrics emitted to Amazon CloudWatch make it easy to alarm and automate corrective actions

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Amazon SageMaker Model Monitor demo

How to get started?

- Amazon SageMaker - https://aws.amazon.com/sagemaker/
- Model Monitoring - https://docs.aws.amazon.com/sagemaker/latest/dg/model-monitor.html
- Model Monitor Examples - https://github.com/awslabs/amazon-sagemaker-examples

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Thank you!