

END TO END AI PROJECT SOLUTION – MACHINE LEARNING

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PRESENTATION OUTLINE

- EagleSense AI's Navigation
 - Mission
 - Vision
 - Expectations
- Typical AI Project Life Cycle
- Putting AI Models in Production
- Concept of Continuous Training and Continuous Deployment
- Basics and requirements





- ✓ **The ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it—that’s going to be a hugely important skill in the next decades. – Han Varians**
- ✓ **The future belongs to the companies and people that turn data into products - Mike Loukides (VP Content Strategy @ O’Reilly)**

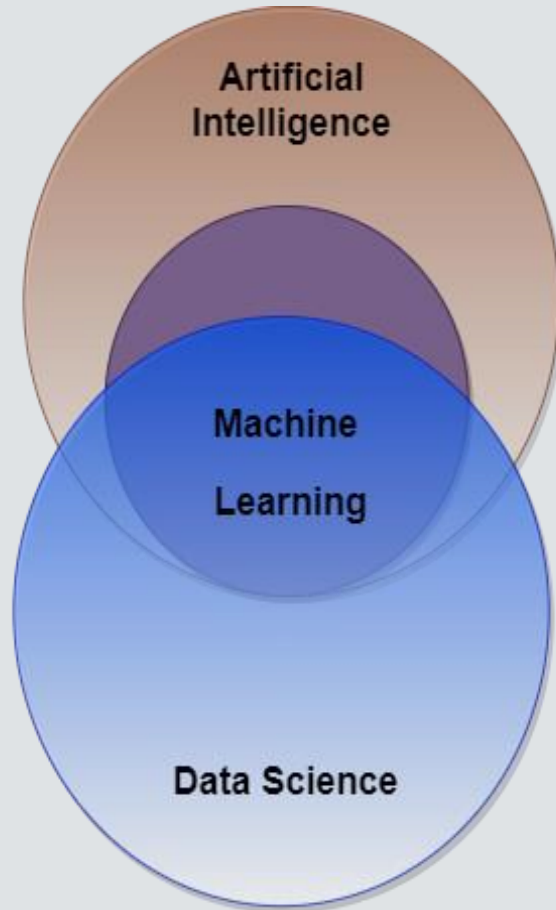
EAGLESENSE AI NAVIGATION



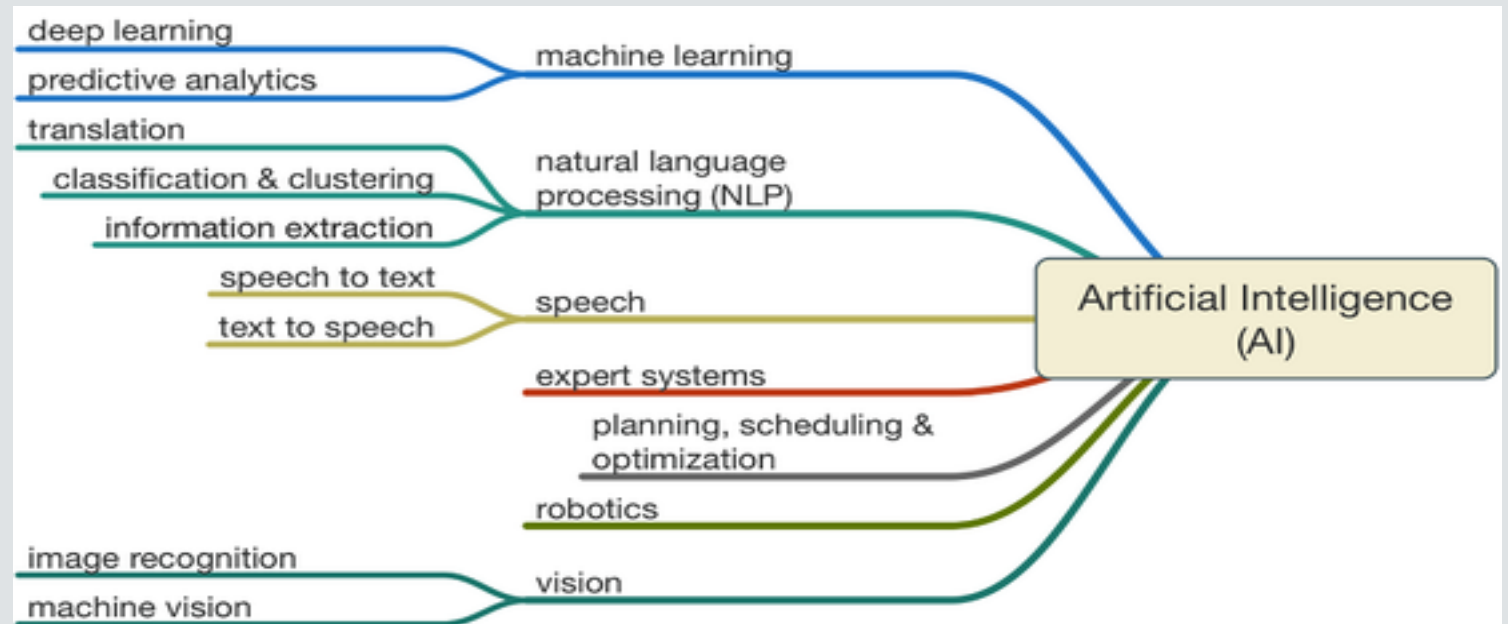
- Mission: To train and mentor 100 AI engineers into professionals every year while offering fundamental structure for possible AI use cases for startups.
- Vision: To create a whole new AI ecosystem for non-AI professionals and startups that will drive quality and impactful AI solutions for Africa.
- Expectations: Student commitment, engagement, and openness to curiosity

Week -1: Kick off call

BRANCHES OF AI



- Data science is an interdisciplinary field that uses **scientific methods, processes, algorithms** and **systems** to **extract** knowledge and insights from **structured** and **unstructured data**, and apply knowledge and actionable insights from data across a broad range of application **domains**. ~Wikipedia



TYPICAL AI PROJECT LIFE CYCLE

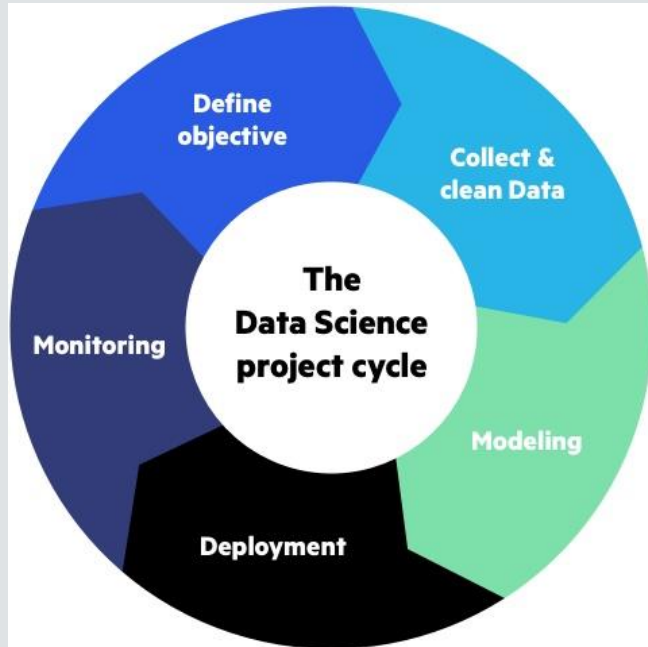


Figure 1a: A data science project life cycle

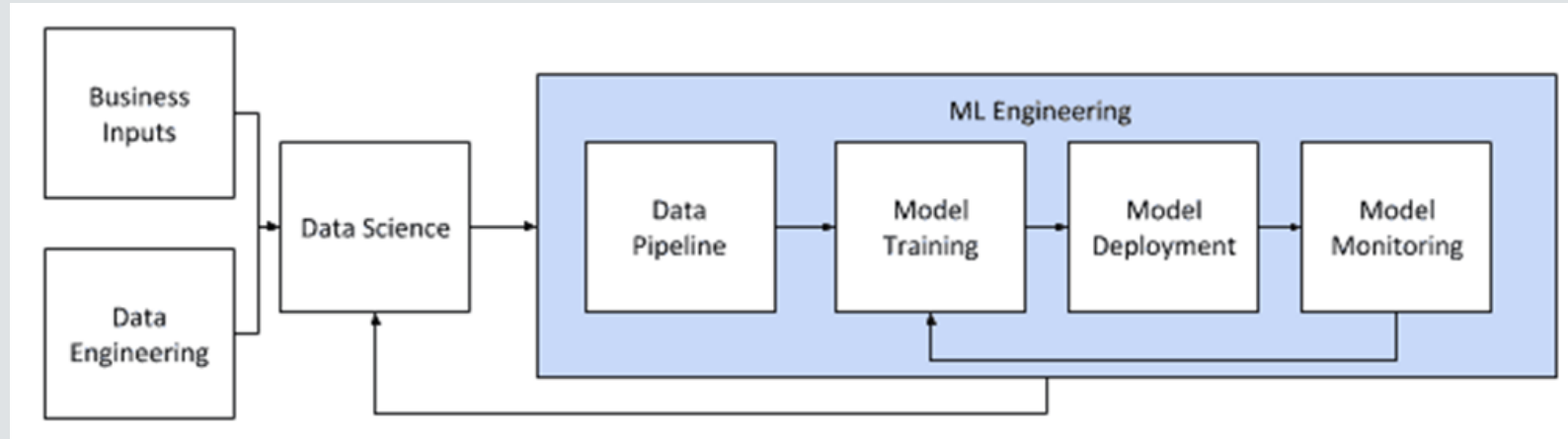


Figure 1b: Breakdown of data science project life cycle

Figure 1a: The life cycle of a typical machine learning project

TYPICAL ML PROJECT LIFE CYCLE

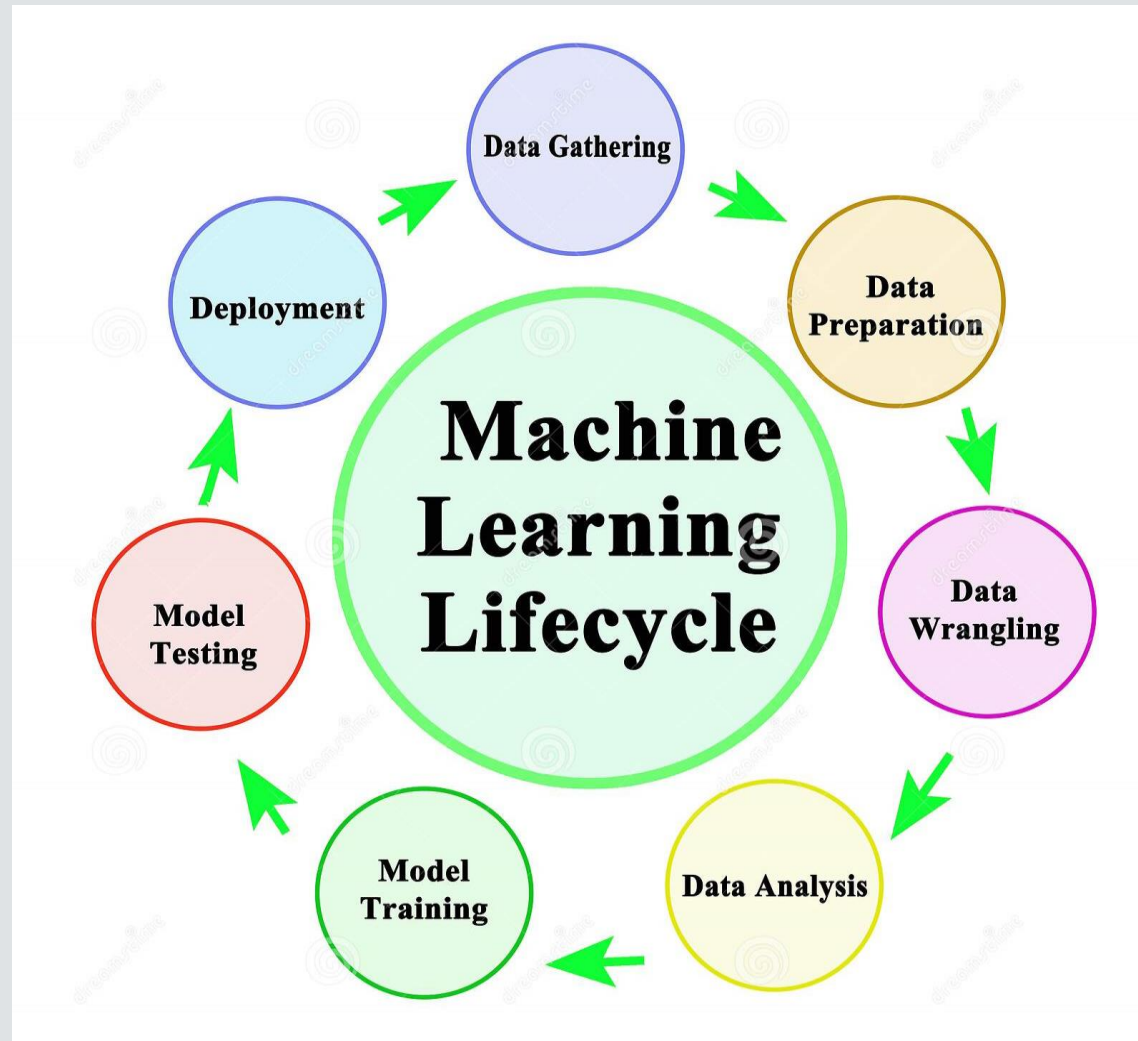


Figure 1a: The life cycle of a typical machine learning project

Week -1: Kick off call

PUTTING AI MODELS IN PRODUCTION



According to businesswire earlier in 2021,...



87%

of data science
projects never make
it into production



32%

need months to
get models into
production

MLOps =>

“seeks to **increase** automation and **improve** the quality of production models, while also **focusing** on business and regulatory requirements.”

Week -1: Kick off call

Reference: https://www.businesswire.com/news/home/20210209005426/en/New-Survey-Finds-Model-Driven-Culture-Is-Critical-for-Data-Science-Success?utm_campaign=tecton&utm_medium=blog&utm_source=datagram

PUTTING AI MODELS IN PRODUCTION

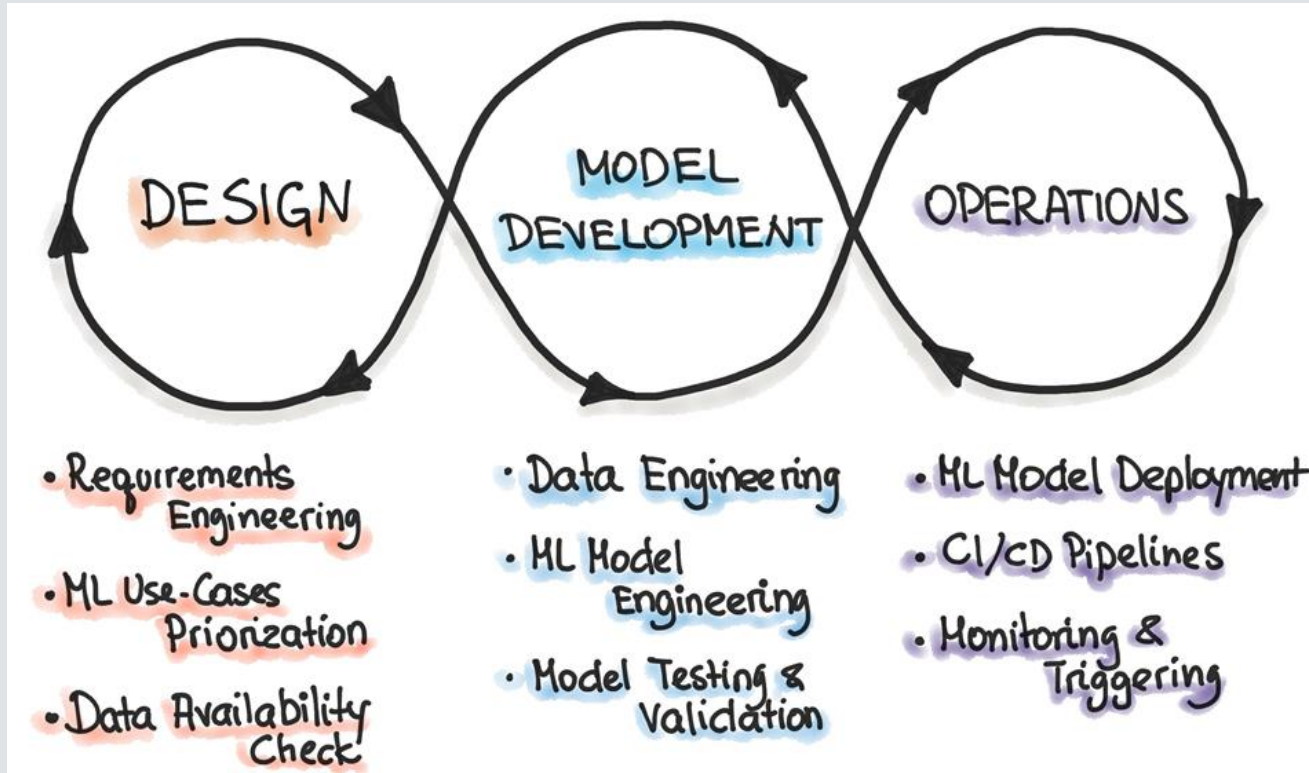


Figure 2: The life cycle of an MLOps

EXPECTATIONS OF A DATA SCIENTIST(OR ML ENGINEER)



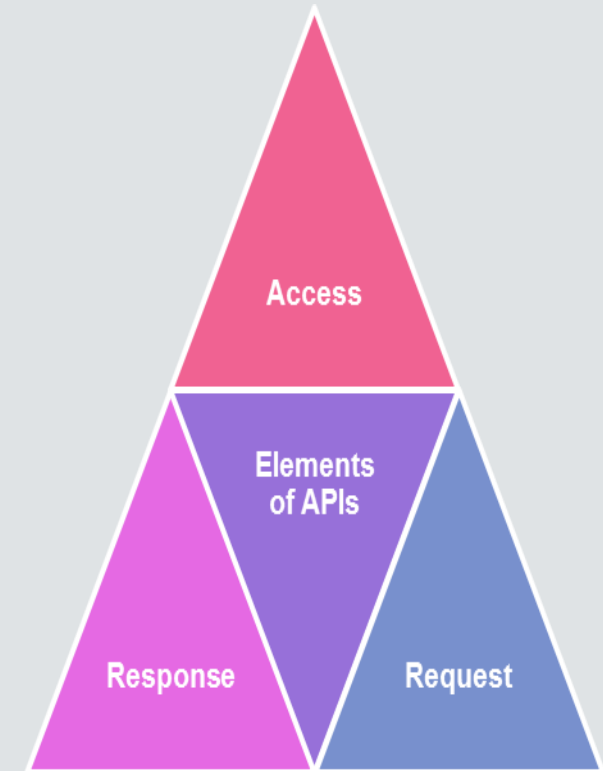
- 1) Experience with more than a domain
- 2) Ability to clean and extract insight from data – Data story telling [Analytics & Story telling]
- 3) Putting models to production
- 4) Define a business use case



INTRODUCTION TO APIS

APIs are rules or guidelines that define the way applications or devices can connect, and communicate.

A RESTful(or REST – REpresentational State Transfer) APIs are those that follows the REST architectural principles.



INTRODUCTION TO APIS



✓ **What is Web Api?**

Web Api is a type of Apis that was derived from the concept of web development, to aid functionality for http clients or web browsers.

✓ **Features of Web Api**

- Web Apis are client-side oriented.
- Most times access is via URI using http requests.
- Web Api uses REST for it interactions.

INTRODUCTION TO APIS

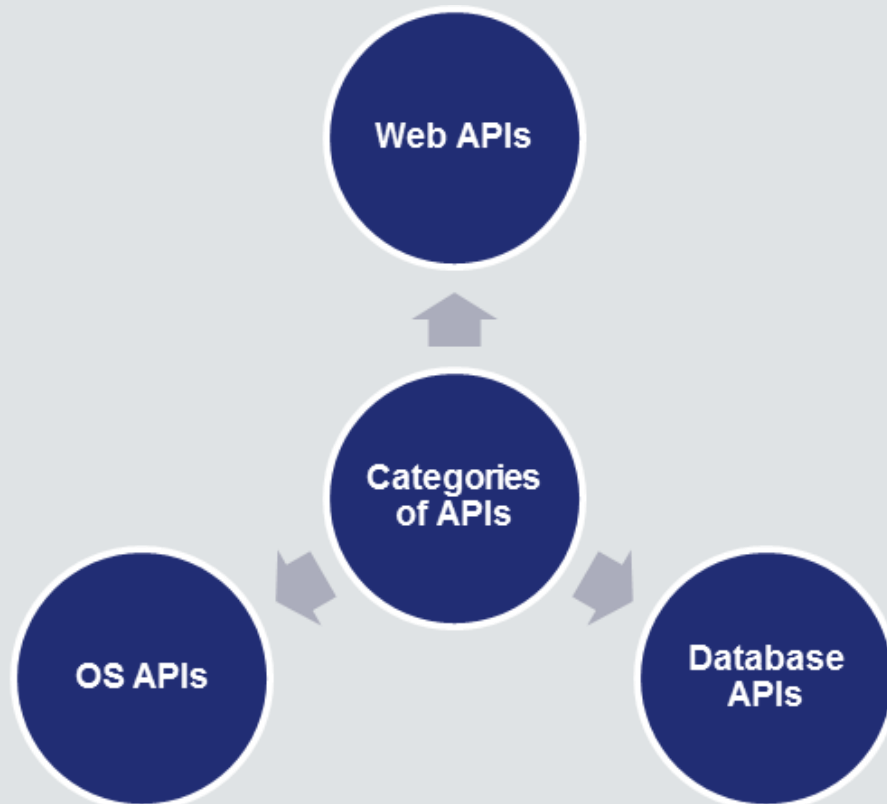


Figure 3a: Categories of MLOps

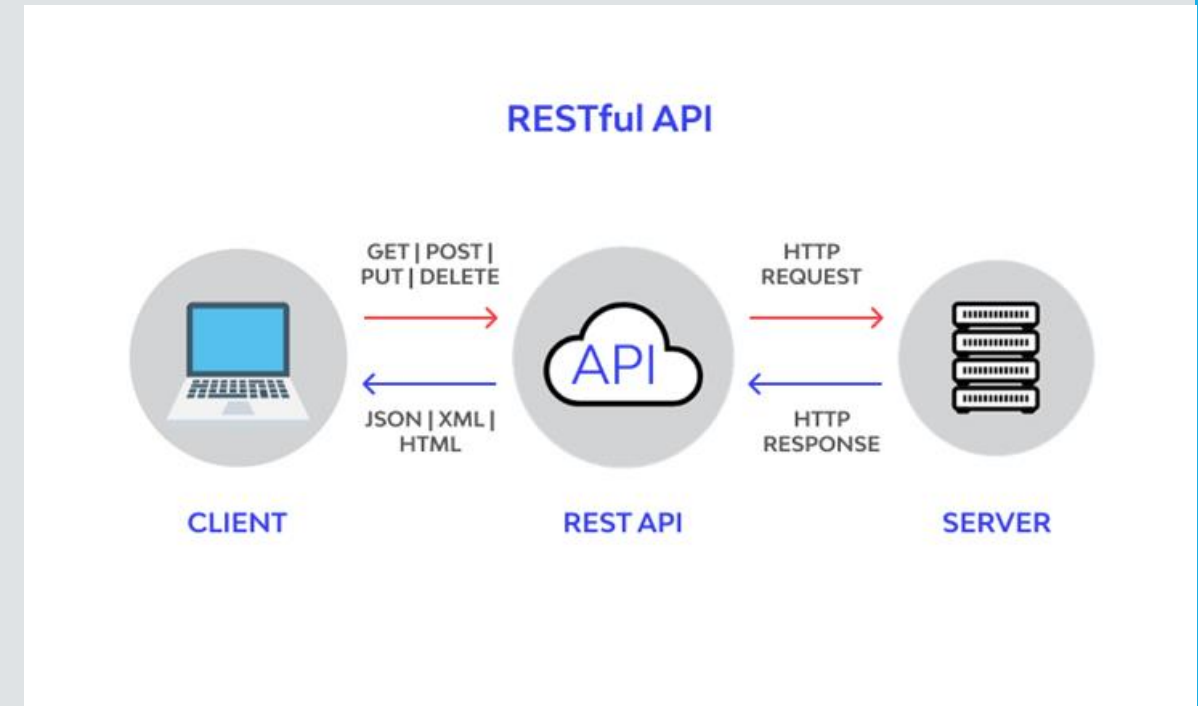


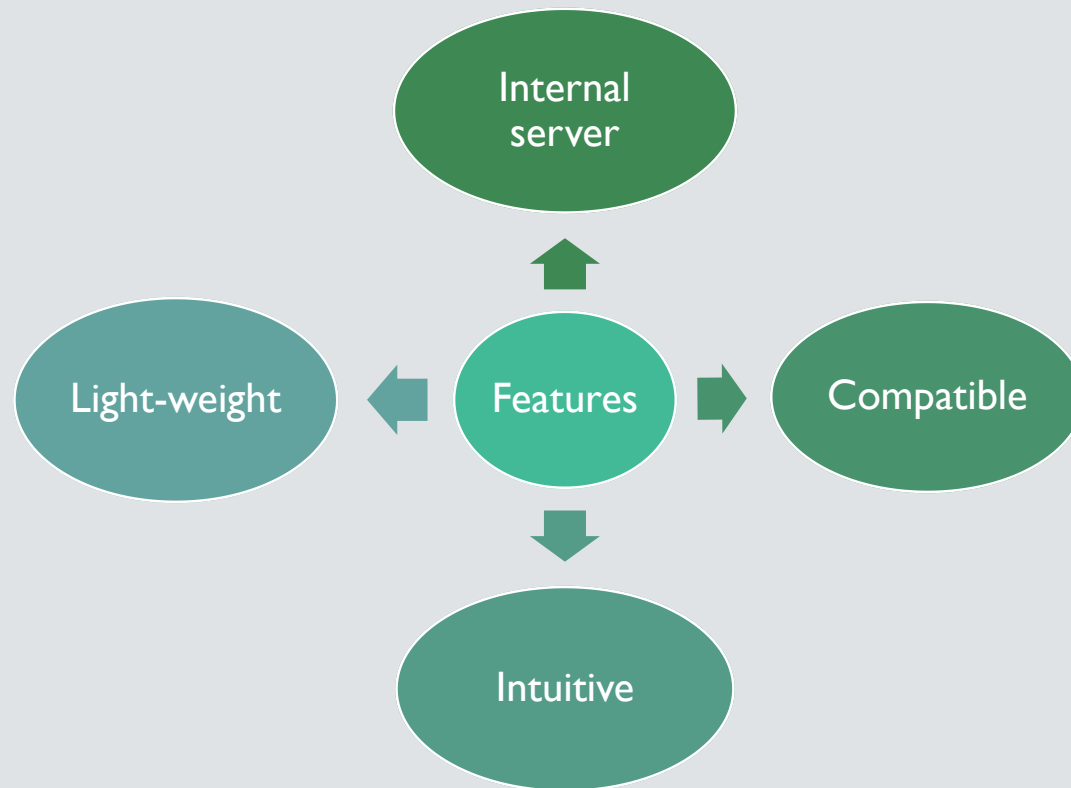
Figure 3b: Structural Architecture of RESTful API

INTRODUCTION TO APIS



What is FlaskApi?

- According to wikipedia, Flask is a “*micro web framework written in python for developing APIs*”.



Week -1: Kick off call

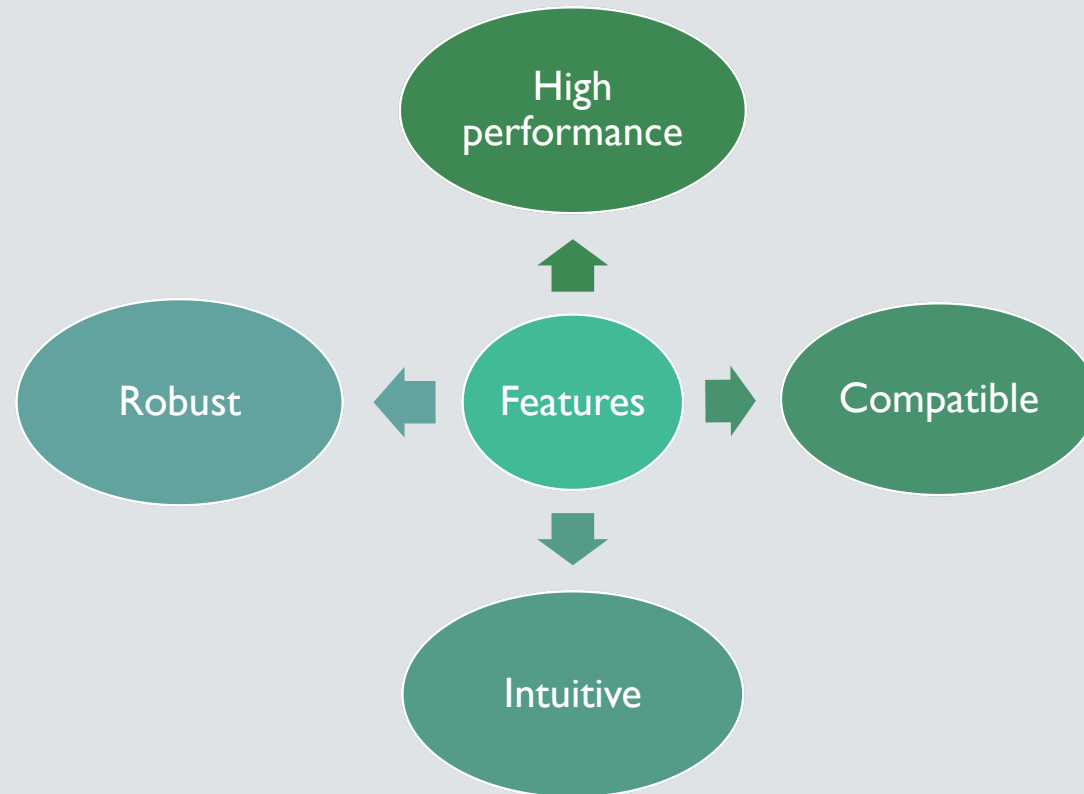
Reference: <https://www.dreamstime.com/components-machine-learning-lifecycle-components-machine-learning-lifecycle-image200203062>

INTRODUCTION TO APIS

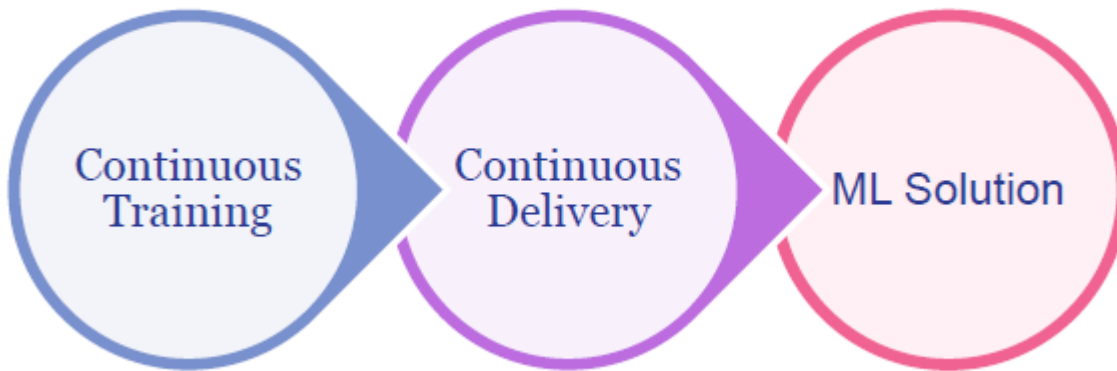


What is FastApi?

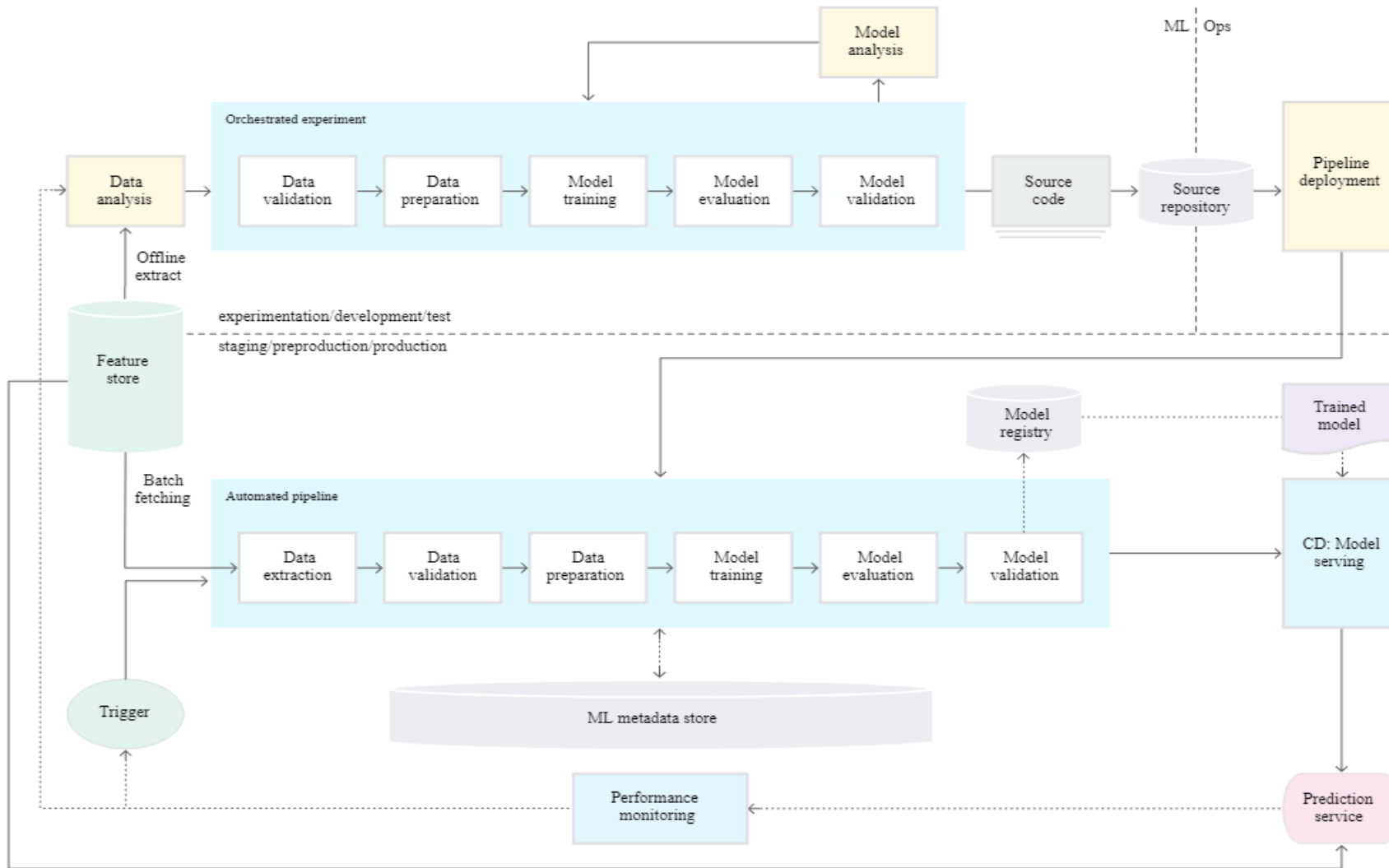
- According to FastApi documentation, FastApi is a “modern high-performance web framework for building APIs with Python 3.6 and above.”



CONCEPT OF CONTINUOUS TRAINING AND CONTINUOUS DEPLOYMENT



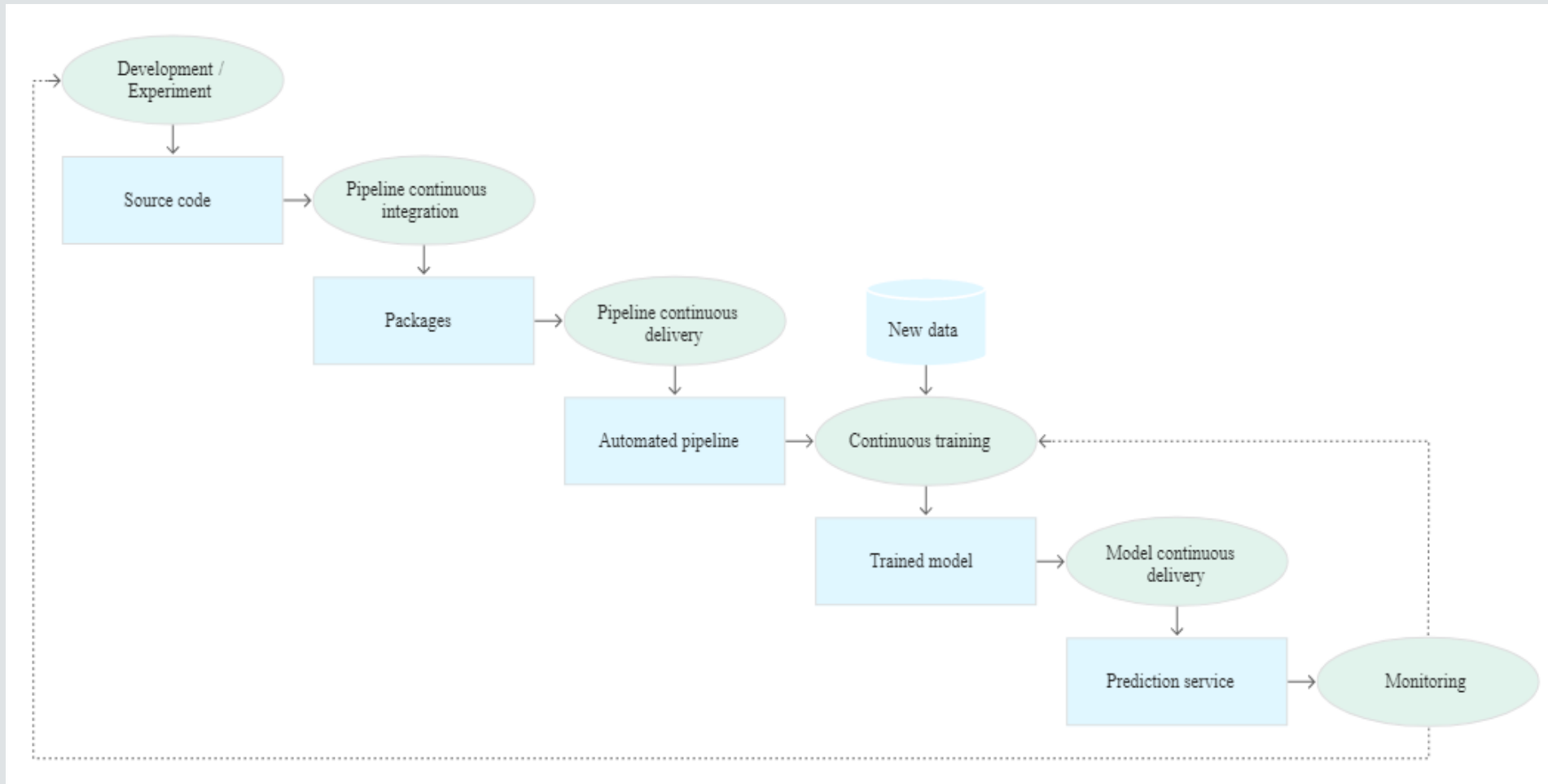
CONCEPT OF CONTINUOUS TRAINING AND CONTINUOUS DEPLOYMENT



Week -1: Kick off call

Reference: <https://bit.ly/3IsaoLi>

CONCEPT OF CONTINUOUS TRAINING AND CONTINUOUS DEPLOYMENT



MONITORING MODEL PERFORMANCE

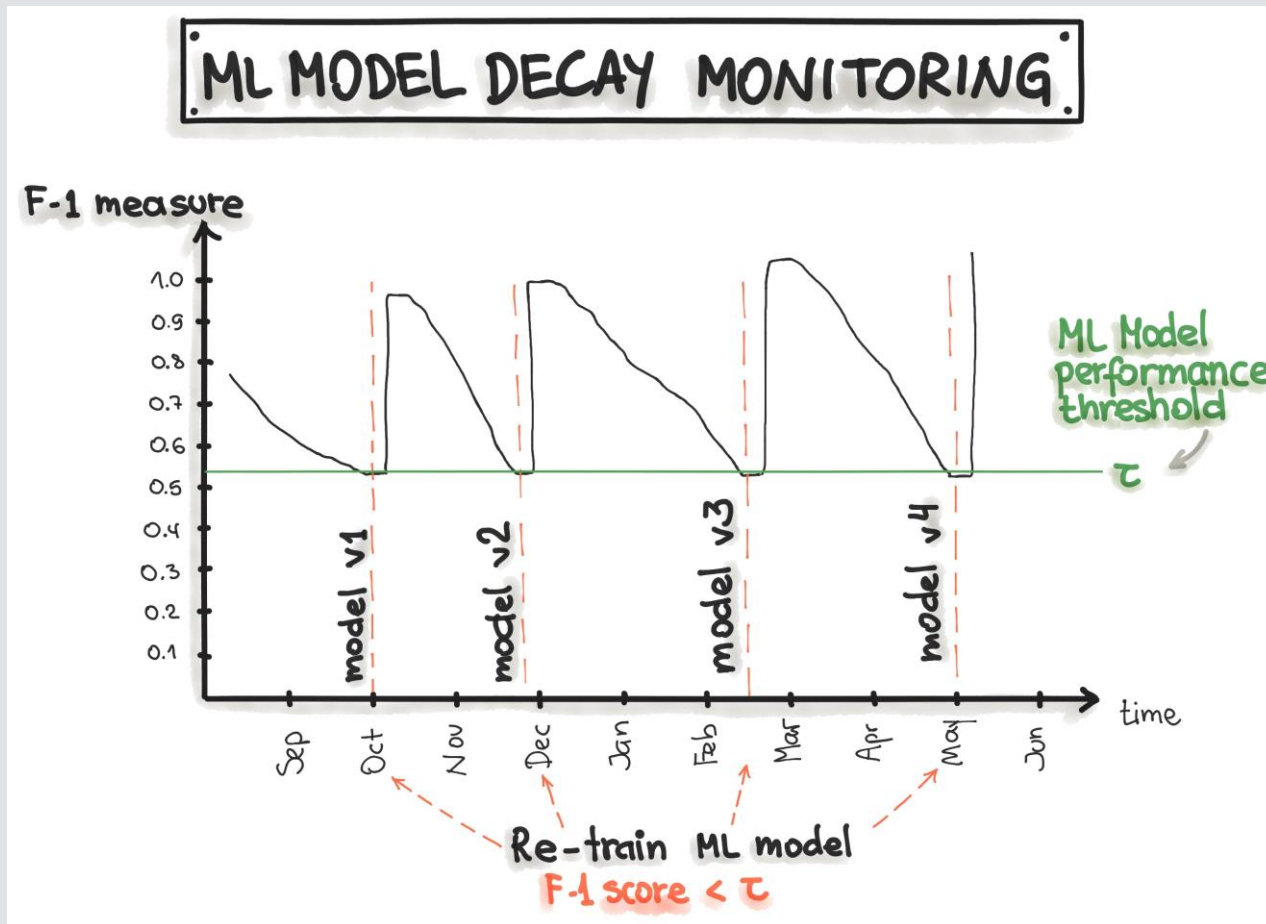


Figure 3: Monitoring model decay

2022 Q1 CORHORT



- ✓ Week 1:
 - Kick off call
 - Assignment 1
- ✓ Week 2: Data cleaning
 - ✓ Data cleaning and visualization
 - ✓ Assignment 2
- ✓ Week 3: Algorithm training and validation
 - ✓ Data modeling and validation with experiment tracking(mlflow, neptune)
 - ✓ Assignment 3
- ✓ Week 4: Deployment
 - ✓ Model deployment on heroku with flask
 - ✓ Model deployment on miamarketplace
- ✓ Week 5: Final project submission

REQUIREMENTS



- ✓ A github account: <https://github.com/join>
- ✓ Anaconda or Jupyter lab: <https://docs.anaconda.com/anaconda/install/windows/>
Or <https://jupyter.org/install>
- ✓ Download and install mlflow: <https://www.mlflow.org/docs/latest/tutorials-and-examples/tutorial.html>
- ✓ Create an account with Neptune: <https://ui.neptune.ai/>
- ✓ Create an account with miamarketplace: <https://miamarketplace.com/signup>
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