DSN2098

PROJECT EXIBITION – II

REVIEW - I

Constructing a robust IOT sensor fault detection machine learning pipeline

Meet Our Team

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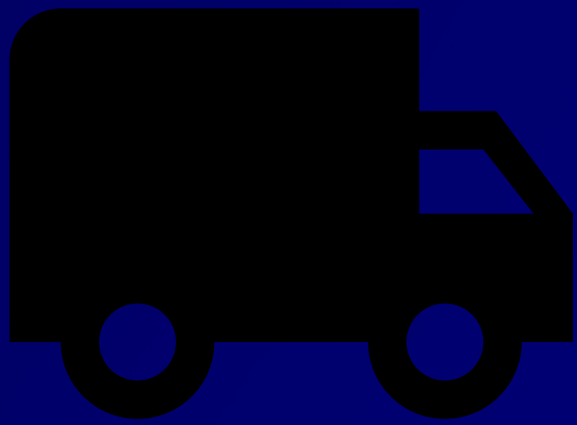
ABSTRACT

- Air Pressure System is a vital component of any heavy-duty vehicle. It generates pressurized air that is used for different tasks such as braking, gear changing, etc. making it a very important subject of maintenance. Air Pressure System failure is common in heavy vehicles and the service and maintenance costs for such failures are high. We monitor the health of this system using sensors.

- These sensors provide the company with real-time data. As these machines usually work in harsh environments, the sensors sometimes return abnormal data, which confuses the engineers.



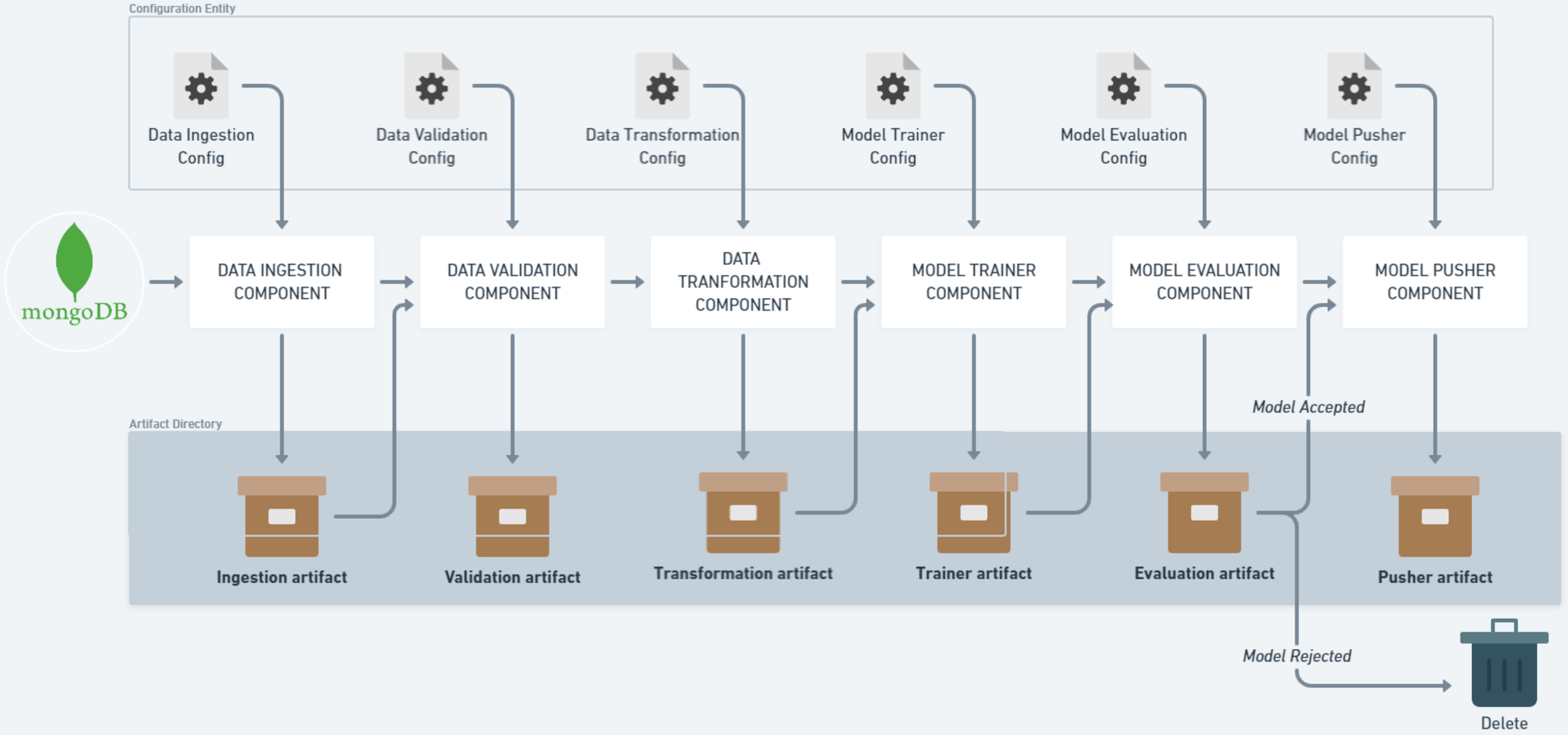
PROBLEM STATEMENT

To save cost and labour the company wants engineers to be sure about condition of air pressure system. So now we have a **binary classification** problem in which the affirmative class indicates that the anomaly was caused by a certain component of the APS, while the negative class indicates that the anomaly was caused by something else. If the anomaly was caused by APS component then engineers will repair or replace it.

OBJECTIVE

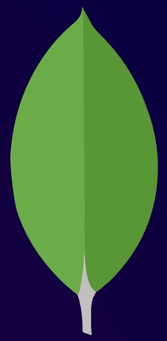
- Building a machine learning training pipeline.
- When new training data becomes available, a workflow that includes data validation, preprocessing, model training, analysis, and deployment will be triggered.
- Robust pipeline with ability to focus on new models, not maintaining existing models.
- Devlopment of an application to recieve real time status

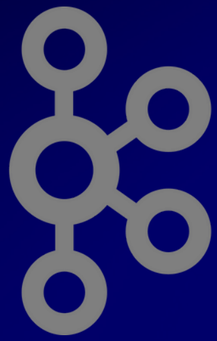
High Level Design
(Project Architecture)



Tech Stack

- Data Science

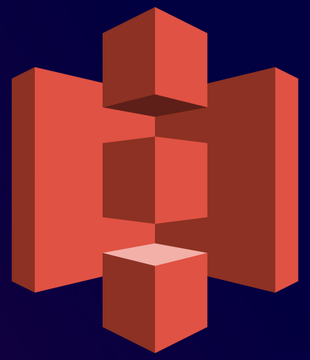


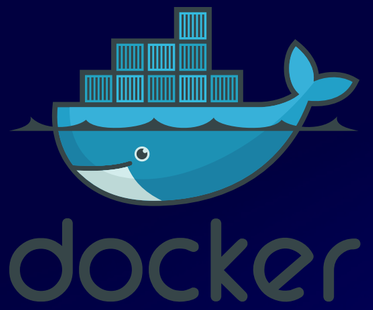


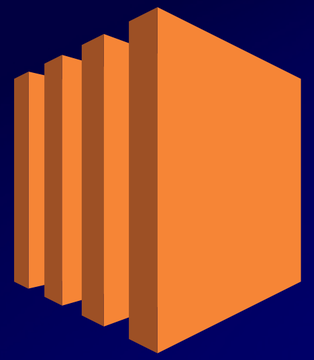
Python | MongoDB | PyCharm | Jupyter | Kafka

Tech Stack

- Cloud and deployment





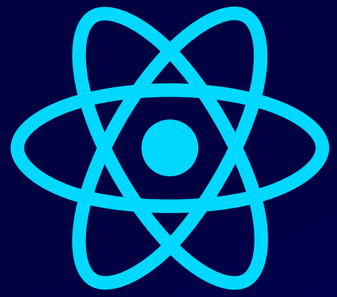


FastAPI	AWS S3	PyCharm	AWS EC2

Tech Stack

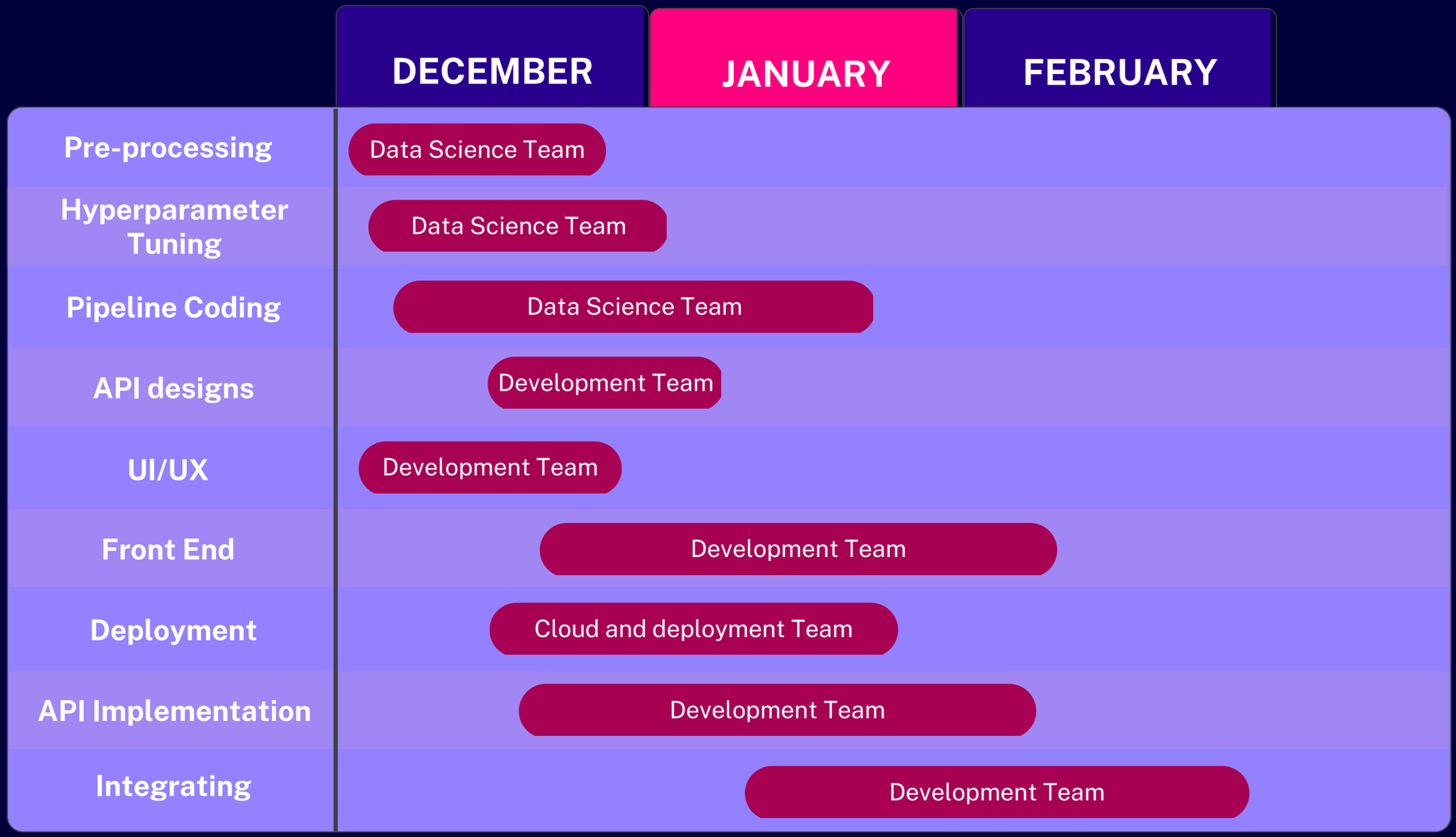
- Development

Express.js



MongoDB | Express.js | React.js | Node.js

Project Timeline



CONTRIBUTIONS

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- Pranav Gupta

DEPLOYMENT TEAM

- Vaasu Bisht

DEVELOPMENT TEAMS

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- Aarav Rajput
- Vaasu Bisht

REFERENCES

- Truck APS Failure Detection using Machine Learning
- Building Machine Learning Pipelines
- Building Data Science Applications with FastAPI
- Node.js Design Patterns
- Data Science on AWS

Team 3

THANK YOU

github.com/BackRoadAI

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