



SALES PREDICTION

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AGENDA:

- Problem Statement
- System Requirements
- System Architecture
- Algorithm Used
- Model Integration
- Output
- Conclusion



PROBLEM STATEMENT:

PREDICTION OF SALES OF A PRODUCT

SUPERVISED LEARNING

REGRESSION

XG BOOST ALGORITHM



Grocery Store

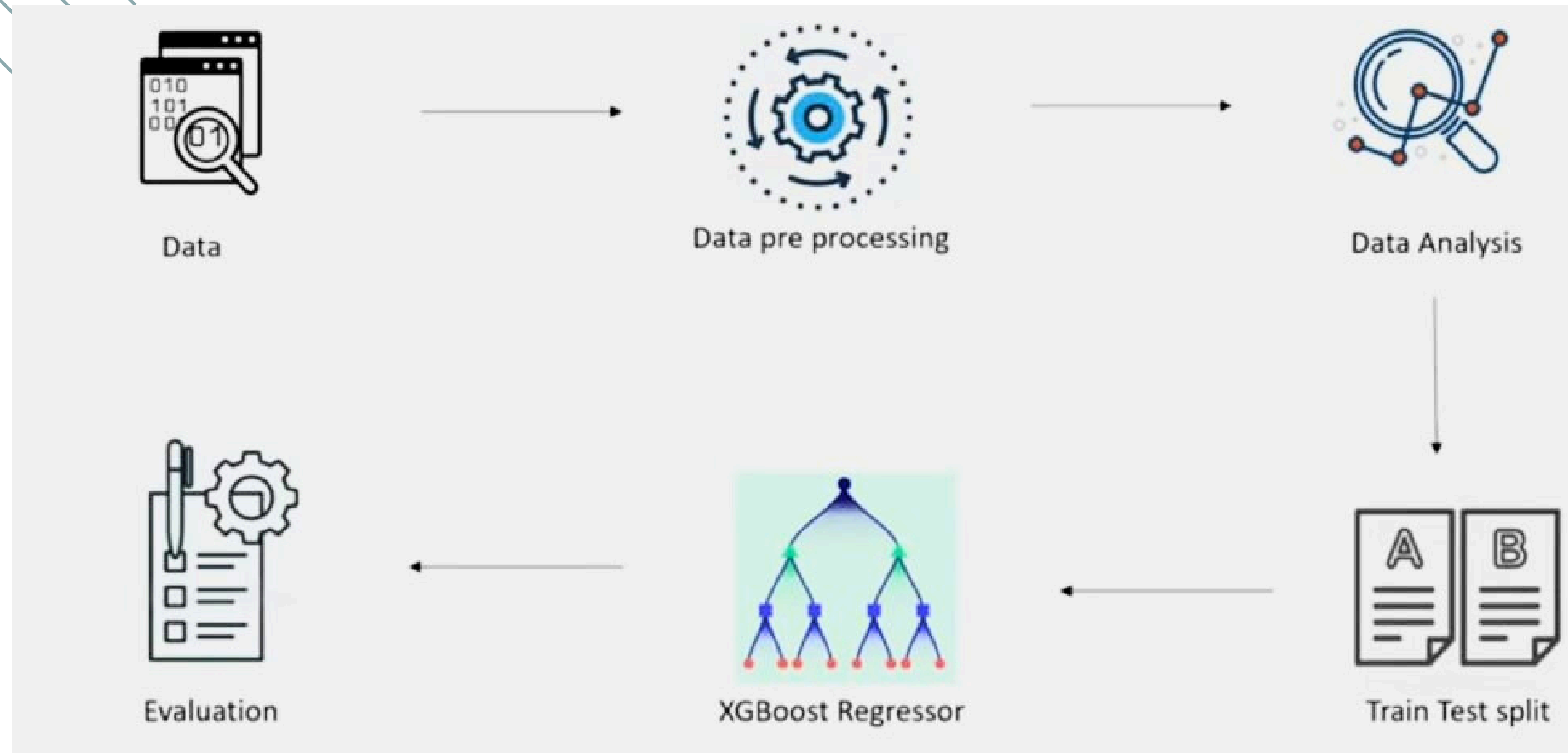
WHY SALES PREDICTION ?



SYSTEM REQUIREMENTS:

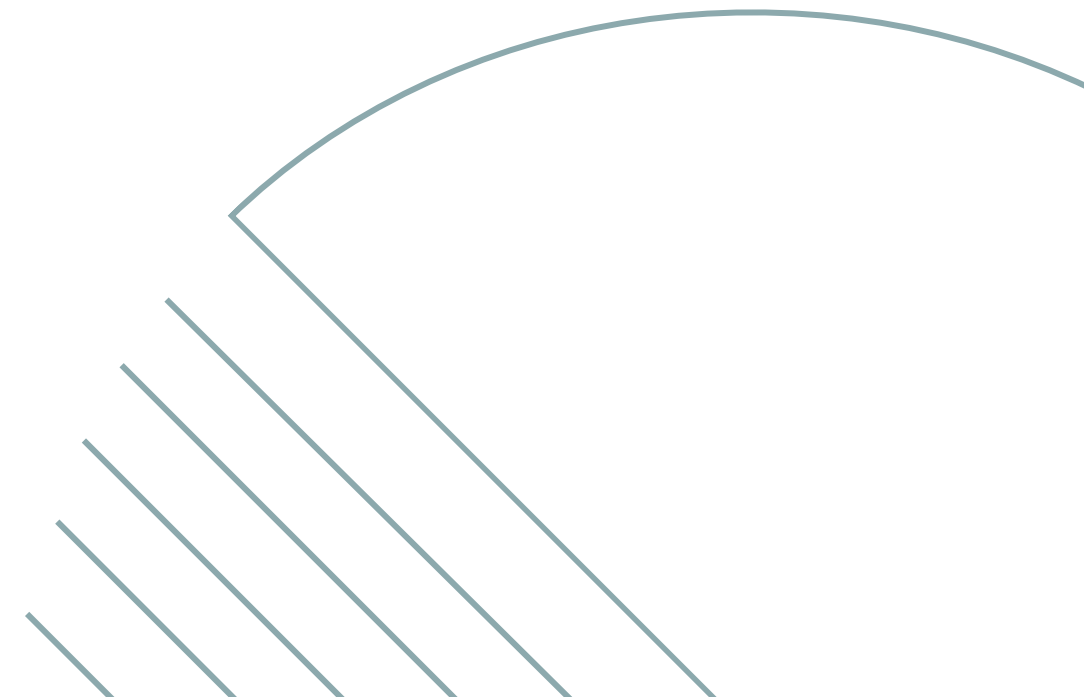
- Processor: Intel i3 and above
- Operating System: Windows 8 and above
- Front-end : HTML, CSS, JavaScript
- Back-end: Fast-API

SYSTEM ARCHITECTURE:

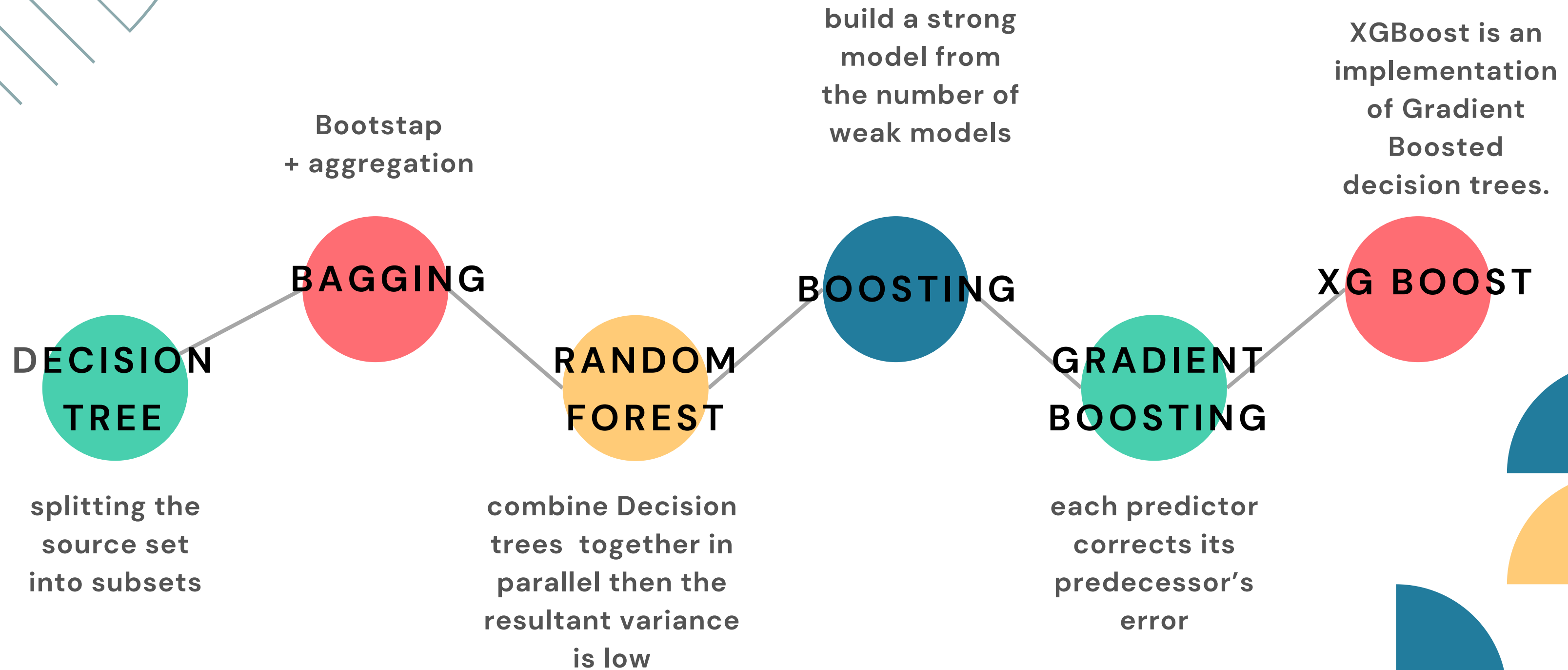


XG BOOST ALGORITHM

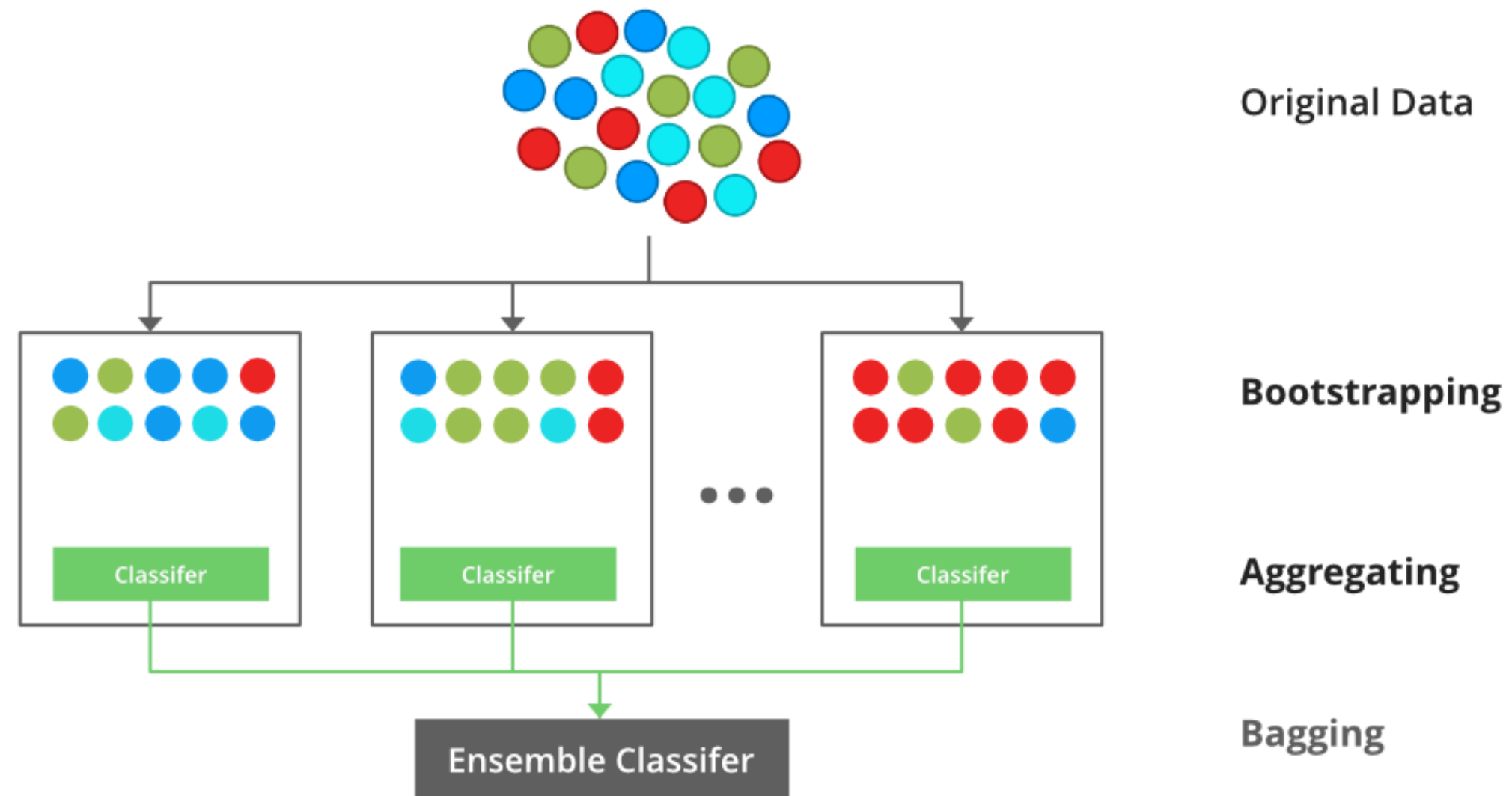
- XGBoost stands for “Extreme Gradient Boosting”
- Ensemble learning method
- Ability to handle large datasets and its ability to achieve state-of-the-art performance



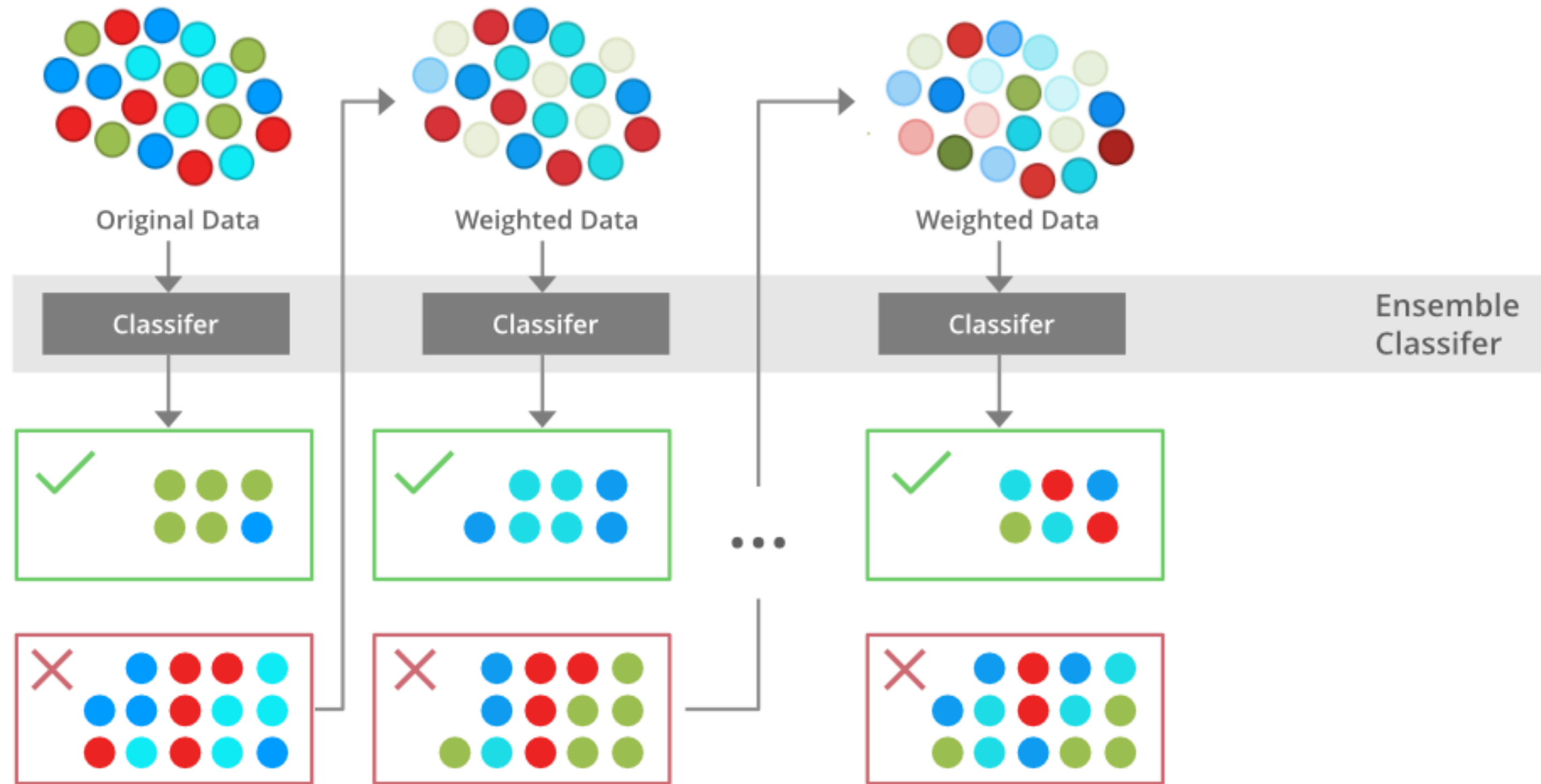
UNDERSTANDING XG BOOST :



BAGGING

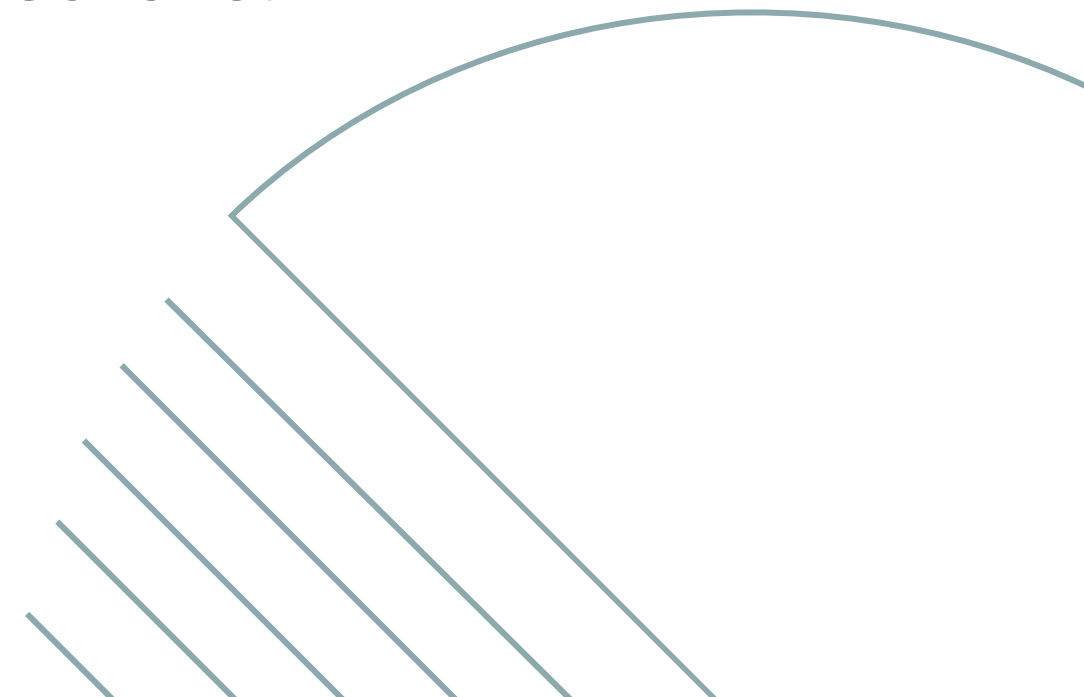


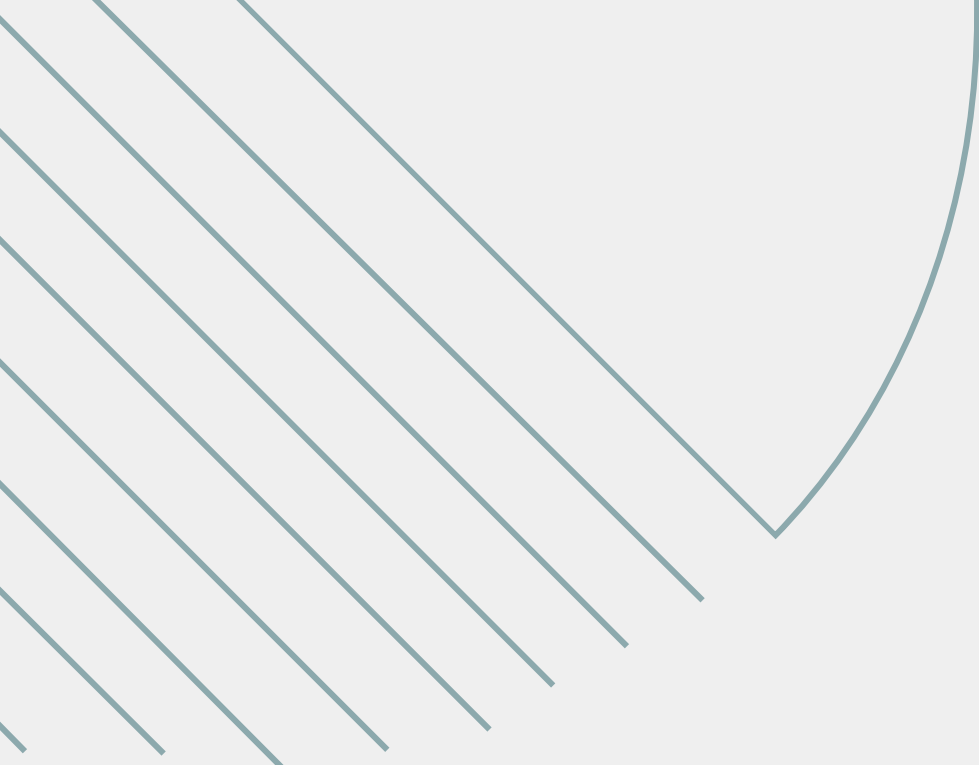
BOOSTING



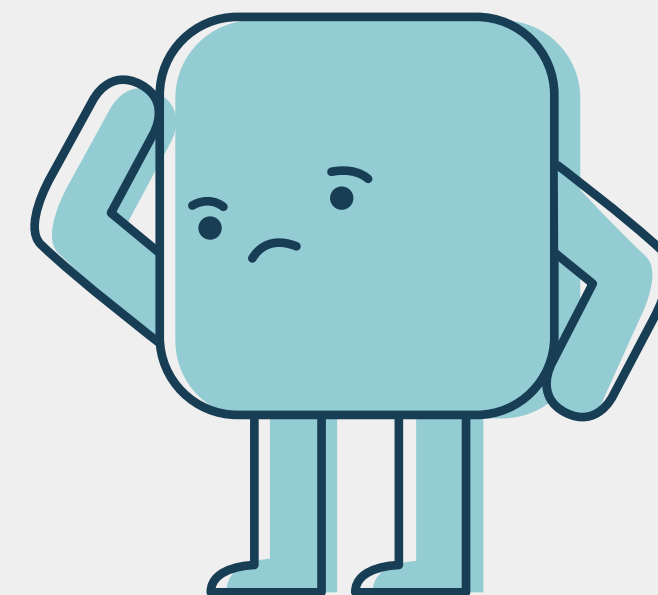
DIFFERENCE

- Performance
- Regularization
- Tree Construction: In Gradient Boosting, trees are built sequentially
- XGBoost, by using a gradient descent algorithm faster and more accurate.





HOW TO INTEGRATE THIS MODEL?





FAST API

- FastAPI is a modern, fast web framework for building APIs with Python.
 - It does not have inbuilt server so it uses ASGI.
- 



ASGI SERVER

Asynchronous Server Gateway Interface (ASGI)

Communicate between asynchronous web applications and web servers in Python.



ASGI VS WSGI

ASGI

- **Asynchronous Server Gateway Interface**
- **Allow for concurrent handling of multiple connections without blocking**
- **Fast API**

WSGI

- **Web Server Gateway Interface**
- **Handle one request at a time**
- **DJANGO**
- **FLASK**

CORS

- Cross Origin Resource Sharing
- It's a security feature implemented by web browsers to restrict web pages from making requests to a different origin than the one from which the page was served.

ORIGIN

Origin is a combination of

- Protocol
- Domain
- Port(optional)

For example, consider the following origins:

- `http://example.com`
- `https://subdomain.example.com`
- `https://example.com:8080`

OUTPUT:



FIG SALES PREDICTION

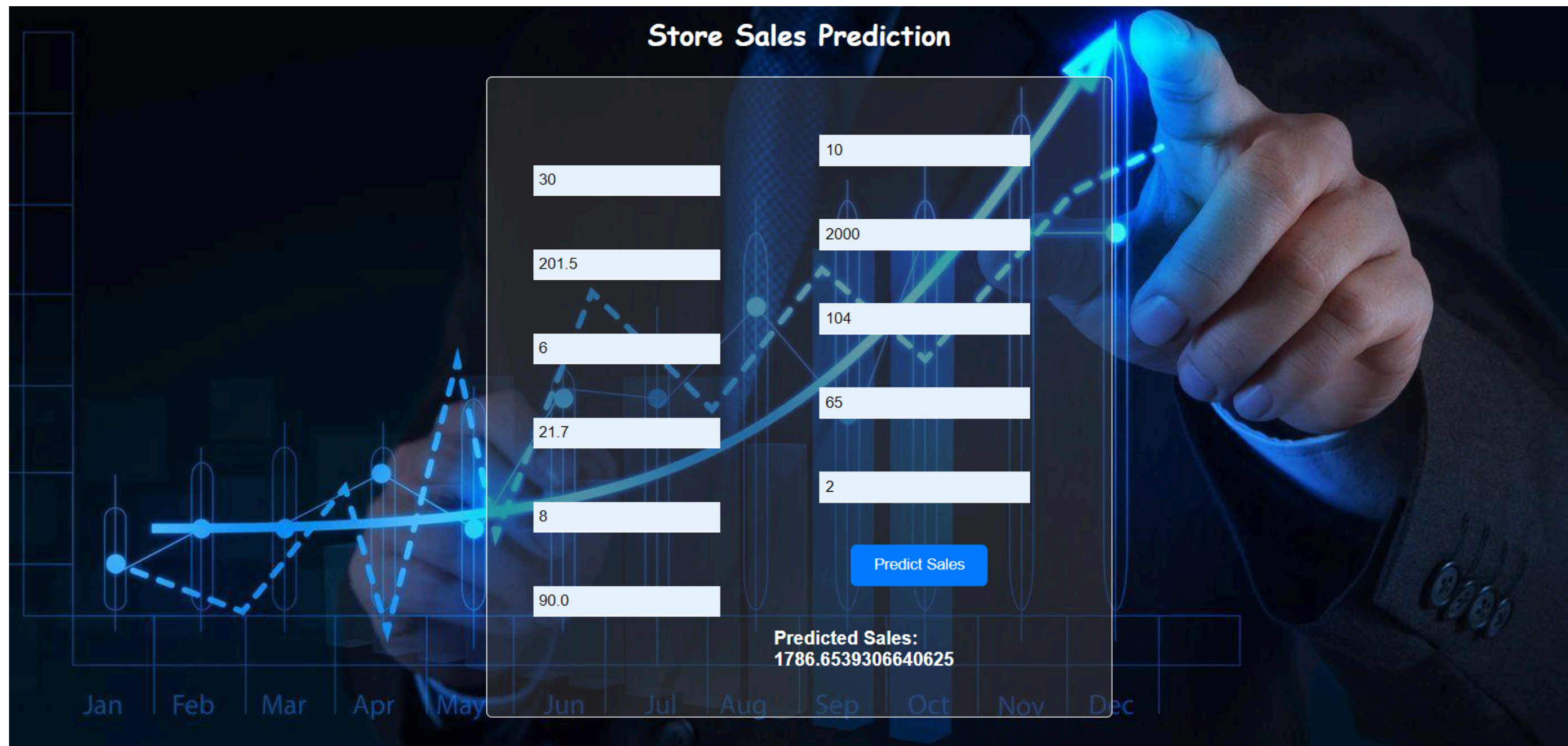


FIG SALES PREDICTION

The background features four decorative geometric patterns in the corners. The top-left corner has a series of parallel diagonal lines in a light blue-grey color. The top-right corner contains a cluster of overlapping semi-circles in yellow, red, teal, and dark blue. The bottom-left corner also features a cluster of overlapping semi-circles in red, teal, and dark blue. The bottom-right corner has a pattern of parallel diagonal lines in a light blue-grey color, similar to the top-left but with a different orientation.

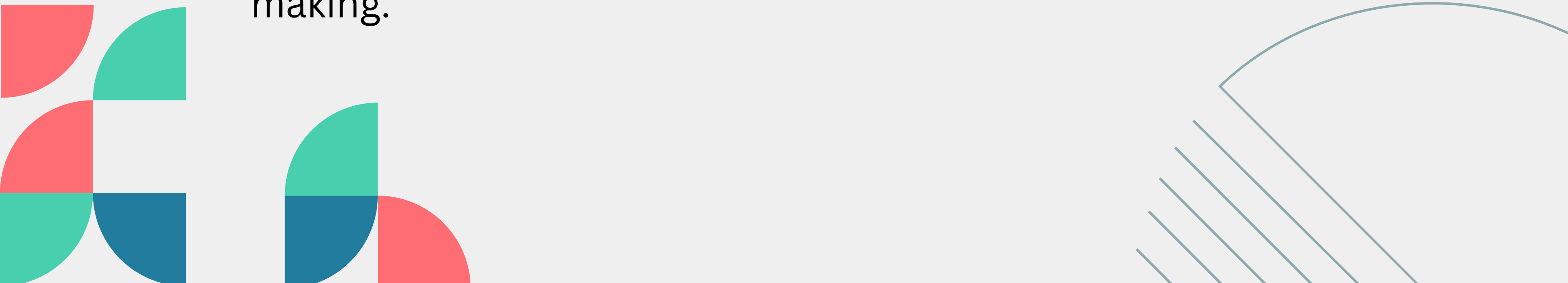
WORKING

The image features a light gray background with decorative geometric patterns in the corners. The top-left corner has a series of parallel diagonal lines. The top-right corner contains several overlapping semi-circles in yellow, red, and teal. The bottom-left corner features overlapping semi-circles in red, teal, and dark blue. The bottom-right corner has a large, faint semi-circle outline with several parallel diagonal lines inside it.

IMPLEMENTATION



CONCLUSION:

- In summary, our XGBoost-based sales prediction model proved highly accurate and effective, outperforming traditional methods.
 - This demonstrates the value of advanced machine learning in enhancing sales forecasts and supporting strategic decision-making.
- 

The background features four decorative geometric patterns in the corners. The top-left corner has a series of parallel diagonal lines in a light blue-grey color. The top-right corner contains a cluster of overlapping semi-circles in yellow, red, and teal. The bottom-left corner features a similar cluster of overlapping semi-circles in red, teal, and dark blue. The bottom-right corner has a large, light blue-grey arc with several parallel diagonal lines extending from its base.

THANK YOU