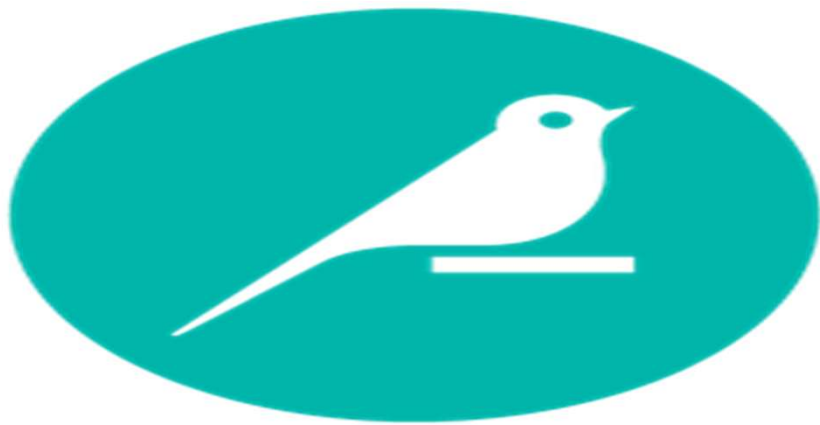
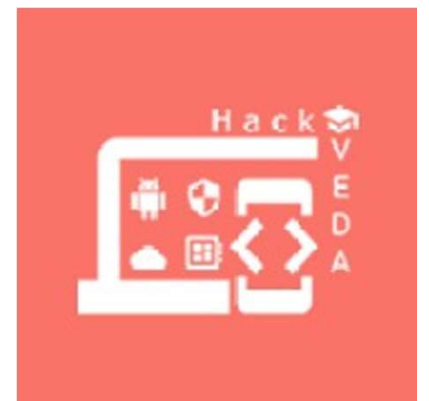


# Future Location Prediction



**data  
iku**

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## STORY HOOKS



- Using advanced AI and real-time data, it predicts where people and vehicles will be in the **future**, helping you plan better, avoid **delays**, and improve safety.
- Helps anticipate where someone might go next based on their **past movements**.
- Analyze **historical** location data to identify patterns and make accurate predictions about future locations. optimizing travel routes and providing **personalized** recommendations.

# Introduction

- A Future Location Prediction System aims to predict the future location of a **moving object** (e.g., a vehicle, person, or device) based on historical data. This system has applications in various domains such as logistics, urban planning, and personalized services.
- Dataiku, an advanced analytics platform, offers tools for data preparation, machine learning, and deployment. Integrating Dataiku with Amazon Web Services (AWS) **enhances** the system's scalability and efficiency by leveraging AWS's infrastructure and services.

# Objective

- **Data Collection and Preparation:**
  - Gather and preprocess historical location data.
- **Feature Engineering:** Generate relevant features that influence future locations.
- **Model Development:** Develop and train machine learning models to predict future locations.
- **Evaluation:** Assess the performance of the models.
- **Deployment:** Deploy the model for real-time or batch predictions.
- **Integration with AWS:** Utilize AWS services for storage, computing, and deployment.

## Cont..

- **Accuracy:** Accuracy is a critical measure of the effectiveness of future location prediction systems. By utilizing key metrics. High accuracy in predictions translates to tangible benefits across various domains.
- **Security & Privacy:** and privacy are foundational elements in the development of future location prediction systems. By implementing strong security measures and respecting user privacy, organizations can not only protect sensitive data but also trust and compliance with legal standards.

# Data Collection and Preprocessing

- **Data Collection**
- **GPS Data:** Primary source of location data from smartphones, vehicles, and IoT devices.
- **Temporal Data:** Timestamps associated with each GPS data point.
- **Contextual Data:** Information such as weather, events, and traffic conditions.
- **Data Preprocessing**
- **Cleaning:** Remove outliers and errors in GPS data.
- **Normalization:** Standardize data formats and units.
- **Segmentation:** Divide continuous location data into meaningful trips or segments.

# MODEL EVALUATION

## Performance Metrics:

- Root Mean Squared Error (RMSE): Measures the square root of average squared differences between predicted and actual values, Lower RMSE indicates the **better fit**.
- Mean Absolute Error (MAE): Measure the average magnitude of the error in predictions without considering their direction. Lower MAE indicates **better accuracy**.
- R2-Score :Represent the proportion of variance explained by the model Higher indicate **better performance**.



# Demonstration

- AWS and its Instances.
- Connect AWS with Dataiku.
- Dataiku
- Dataset
- Model Selection and Algorithm
- Model Evaluation
- Model Prediction

# Conclusion

- Developing a Future Location Prediction System using Dataiku involves several key steps from data collection to deployment. By integrating AWS, the system benefits from **scalable storage**, robust computing resources, and advanced deployment options. This combination ensures efficient data handling, **robust model development**, and smooth deployment. Continuous monitoring and maintenance are crucial to adapt the model to changing patterns and ensure **sustained accuracy**.
- Dataiku Data Science Studio offers a strong platform for installing, setting up, and utilizing data-driven insights. By streamlining setup and providing robust collaboration and analysis features, DSS enables organizations to fully utilize their data, fostering innovation and **achieving significant results**. Dataiku DSS makes the transition from data to insights smooth, helping organizations excel in today's data-driven environment.

# References

- Amazon Web Services. (n.d.). AWS Documentation. Retrieved from <https://docs.aws.amazon.com/>
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning. MIT Press. Retrieved from <http://www.deeplearningbook.org>
- Dataiku. (n.d.). Dataiku Documentation. Retrieved from <https://doc.dataiku.com/>
- Hackveda Reference Videos.





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