

Setup and Running Guide

Quick Start (3 Steps)

1. Install Dependencies

```
bash  
pip install -r requirements.txt
```

2. Run Example

```
bash  
python example_usage.py
```

3. Train with Your Data

```
bash  
python scripts/train_model.py --data_path your_data.csv
```

Detailed Setup Instructions

Prerequisites

- Python 3.8 or higher
- pip package manager

Installation Steps

1. Clone the repository:

```
bash  
git clone https://github.com/lakshyaarora04/UFC-FIGHT-PREDICTION-MODEL.git  
cd UFC-FIGHT-PREDICTION-MODEL
```

2. Create virtual environment (recommended):

```
bash  
python -m venv ufc_env  
source ufc_env/bin/activate # On Windows: ufc_env\Scripts\activate
```

3. Install required packages:

```
bash
```

```
pip install -r requirements.txt
```

4. Create necessary directories:

```
bash
```

```
mkdir -p models data/raw data/processed
```

Running the Model

Option 1: Quick Demo

```
bash
```

```
python example_usage.py
```

This will:

- Generate sample data
- Train all models
- Show performance metrics
- Make a sample prediction
- Save the trained model

Option 2: Train with Custom Data

```
bash
```

```
python scripts/train_model.py --data_path data/your_ufc_data.csv
```

Option 3: Make Predictions

```
bash
```

```
python scripts/predict_fight.py --fighter1 "Jon Jones" --fighter2 "Stipe Miocic"
```

Option 4: Use as Library

```
python
```

```
from src import UFCFightPredictor, load_and_preprocess_data
```

```
# Load data
```

```
df = load_and_preprocess_data('your_data.csv')
```

```
# Train model
```

```
predictor = UFCFightPredictor()
```

```
predictor.train(df)
```

```
# Make prediction
```

```
result = predictor.predict_fight(fighter1_stats, fighter2_stats)
```

```
print(f"Winner: {result['prediction']}")
```

Data