OPEN PRESENTATION

PROJECT WHEELS

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TABLE OF CONTENT

INTRODUCTION

Project Wheels

- Background
- Research question:
  - How can IMU data be used to identify wheelchair basketball-specific movements?
- Sub-questions
  - Which form of data processing will be used?
  - Which specific movements can be detected?
  - Which sensor data is used for each movement?
  - Can movements be used to predict fatigue?
  - Can movements be used to detect overload?

Requirements

MUST HAVE

- Link the data points to the timestamps
- Calculating:
  - Top Speed
  - Rotation
  - Collision
  - Average speed
  - Fast break
  - Fast defence
- Documentation
- Presentation

SHOULD HAVE

- Prediction
  - Fatigue
- Detection
  - Slip

COULD HAVE

- User manual
- Prediction
  - Overload
- Detection:
  - Repetitive movements
  - Classify player: explosive playing or stamina for a longer time

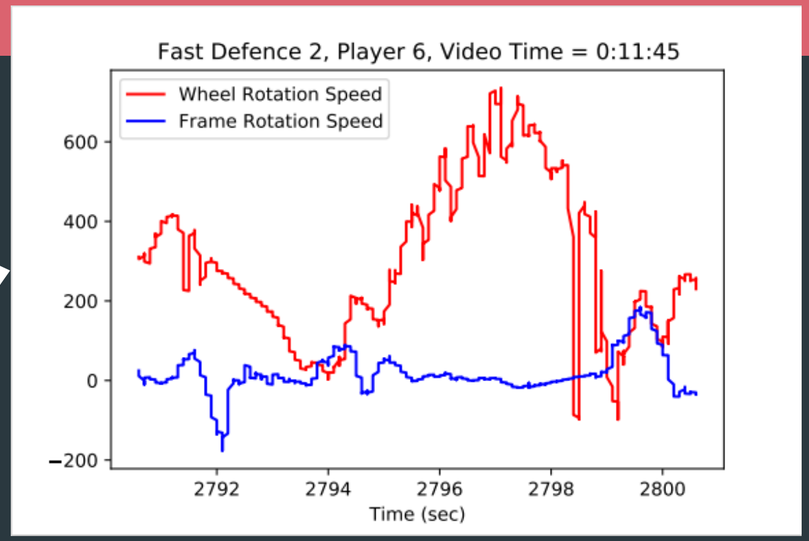
PROJECT ACTIVITIES

RESEARCH

- Desk research
- Defining the dataset
- Applying the research to
  - execute pattern recognition
  - Determine the machine learning

PROGRAMMING

- Dividing the tasks
- Code
- Test the code
- Solve problems



Here we are going to predict the 100 % sprint speed

In [21]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
from scipy.signal import find_peaks

df = pd.read_csv('matrix_player_6.csv')
df = df.fillna(0)
```

In [22]:
```
df['timeLine']
```

Out[22]:
```
0            0.00
1            0.01
2            0.02
3            0.03
4            0.04
            ...
770878    7708.80
```

END RESULT

RESEARCH PAPER

Document explaining the choice of the machine learning method

PROGRAM

Machine learning program classifying all the actions in combination with a matchtime

PROGRAM MANUAL

Code manual for the user

DATA RESULTS

Document with the results obtained from the program