

# Football Match Visualization

A Project for Information Visualization

Kevin Sam, Bram Silue

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# Task and User



## Task

- A **visualization of football games**
- Visualize based on **individual teams** or even **specific players**
- Positioning of different **events**: passes, fouls, shots, etc.
- Player **statistics**

## User

- **Coaches** that can extract meaningful information from certain games in order to make targeted improvements
- **Scouts** that are looking to recruit certain profiles/playing styles
- **Fans** who want to play with the tool for fun

# Dataset

- Kaggle dataset:  
*Soccer match event dataset* (Pappalardo et al., 2019)
  - European Cup of 2016
  - Five national soccer competitions in 2017-2018
  - World Cup of 2018

# Data pre-processing

- Filtering files
- Filtering fields
- Correcting event positions
- Adding action numbers
  - Relate all the events of a same action to each other

# Data processing

- Tools: **Streamlit**, **Plotly** & **Pandas**
- **Events** can be shown:
  - Based on **match**
  - Based on **team**.
  - Based on **player**
  - With **custom colors**
- Events are shown for a particular **time window**
- Implementation of design guidelines
  - **Overview first, details on demand**
    - Interactivity through **hover and on-click** user actions allows for control over visualization detail and complexity

# Demonstration

# Evaluation

## Evaluation Procedure:

- User study with 8 participants
  - 1 coach
  - 1 scout
  - 6 football fans
- Participants had to perform a task and answer a questionnaire
  - Task: Analyse a particular match
    - Subtasks
      - Eg. Which team had the highest successful pass rate on average?
  - Questionnaire (on a scale of 1-5)
    - Eg. How easy is it to find a player you would potentially recruit ?

## Users

- Coaches
- Scouts
- Fans



# Evaluation

## Results

- Positives:
  - Easy to evaluate and analyze a *given* player
  - Easy to analyze team strategies and dynamics as a whole
- Negatives:
  - No quick way to see who is the best / worst player within a role

## Target reached?

- + Easy analysis of strategies of given teams / players
- + Easy analysis of the flow of a match
- + Can infer event sequence success rate based on visuals
- Quickly finding a player type of interest
- Quickly seeing the impact of one player within the entire team's dynamics

# Conclusion & Future work

## Conclusion

- Visualisation tool for football matches
  - Target audience: Scouts, coaches and fans
- Evaluation
  - + Enhances analysis
  - + Provides insights that go beyond statistical information
  - Some additional features could benefit the visualisation

## Future work

- Filter by role
- Player name on rank hover
- Player Impact Highlighting
- Action (Sequence) Highlighting
- Simulation Navigation

The End