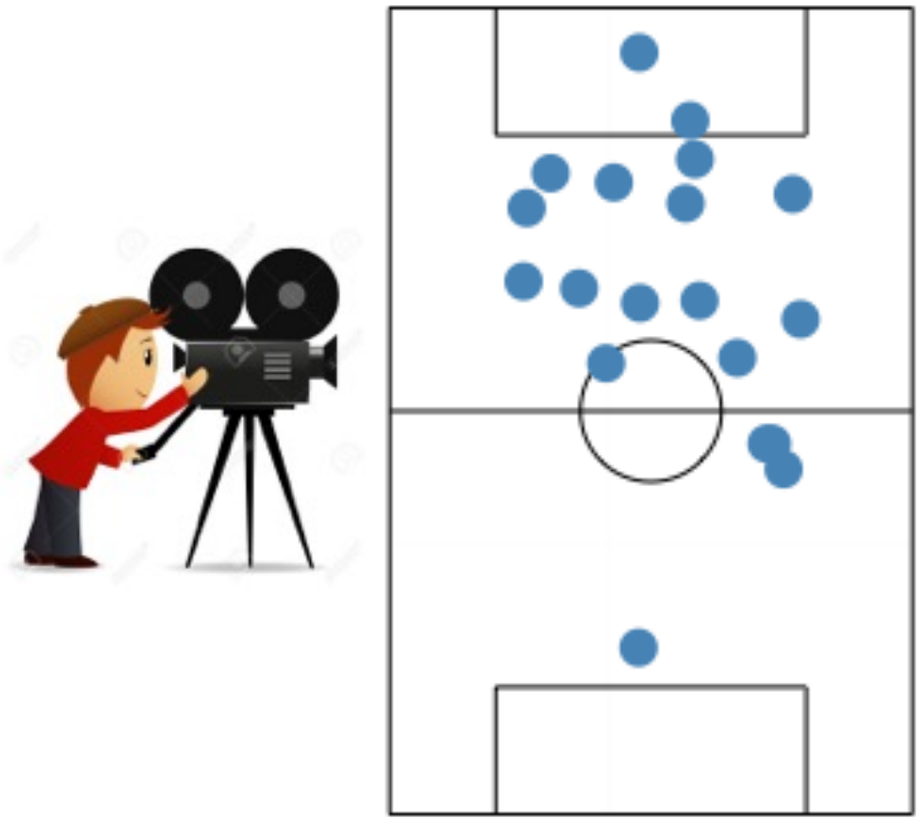
CameramanVis:

Where the Camera Should Look



CPSC 547 Project
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Dec.15, 2015

Camera angle is important

❌

❌

✅

A good angle gives more information (ball, players and events)

Motivation

Our method vs others user study result (data sanitized for public posting due to pending publication)

Visualizing the soccer data

Data

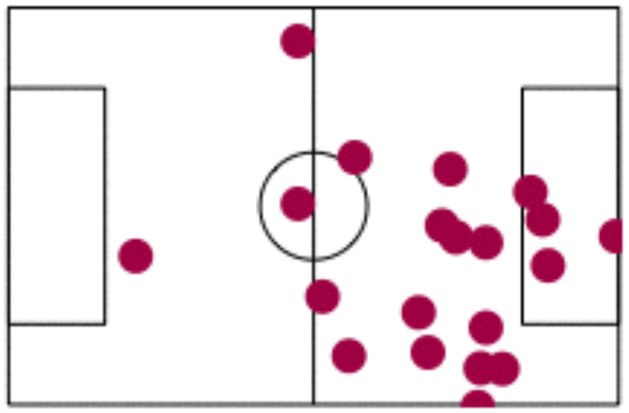
```
frame_number,pan,dim,feature
237600,1.960183,1,8.354970
237600,1.960183,2,8.838090
237600,1.960183,3,1.389021
237600,1.960183,4,7.427950
237600,1.960183,5,5.380531
237600,1.960183,6,2.995559
237600,1.960183,7,-0.009728
237600,1.960183,8,0.965990
237600,1.960183,9,4.297895
237600,1.960183,10,3.318009
237600,1.960183,11,3.667422
237600,1.960183,12,1.954491
237600,1.960183,13,1.006845
237600,1.960183,14,1.992136
237630,1.958862,1,8.607593
237630,1.958862,2,9.026041
237630,1.958862,3,1.483057
237630,1.958862,4,7.595499
237630,1.958862,5,5.539353
237630,1.958862,6,3.015726
237630,1.958862,7,0.024992
237630,1.958862,8,1.062306
237630,1.958862,9,4.083364
237630,1.958862,10,3.831471
```


```
[
    {
        "fn":"237600",
        "location":[62.903845, 32.099816,   66.907939, 49.524216,   72.
98.353361, 26.355138,   27.218020, 31.450606,   39.053616, 33.154999,
44.575603, 22.113964,   49.301739, 32.634364,   55.599219, 20.795098,
43.407134, 32.489862,   38.677770, 63.691278]
    },
    {
        "fn":"238200",
        "location":[62.903845, 32.099816,   66.907939, 49.524216,   72.
98.353361, 26.355138,   27.218020, 31.450606,   39.053616, 33.154999,
44.575603, 22.113964,   49.301739, 32.634364,   55.599219, 20.795098,
    }
]
```


A table of time series spatial data

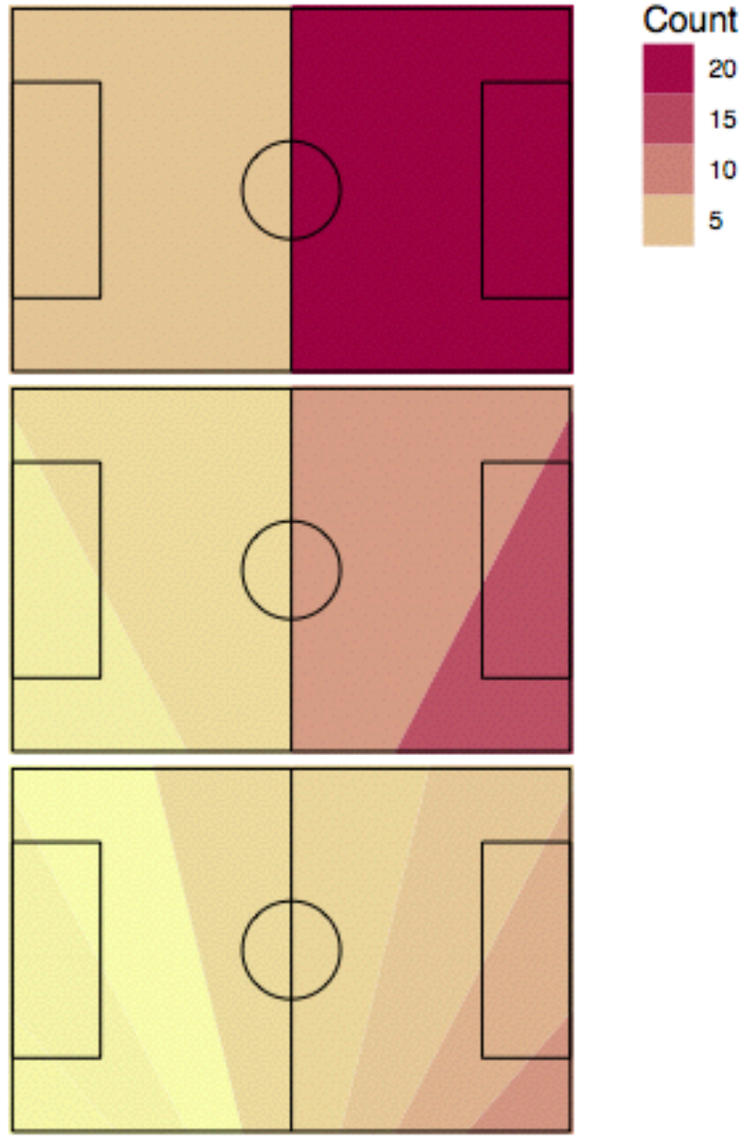
48-min (5,700 frames) camera angle, player location

Feature



player location

derive



14-dim feature

Multiple scale spatial feature from player locations

Users and Tasks

Researcher

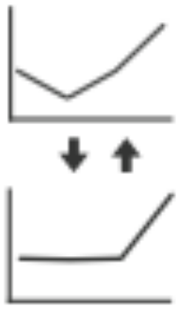
Browse

→ *Discover*

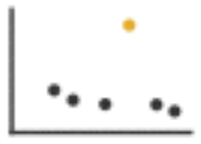
→ *Distribution*

→ Identify

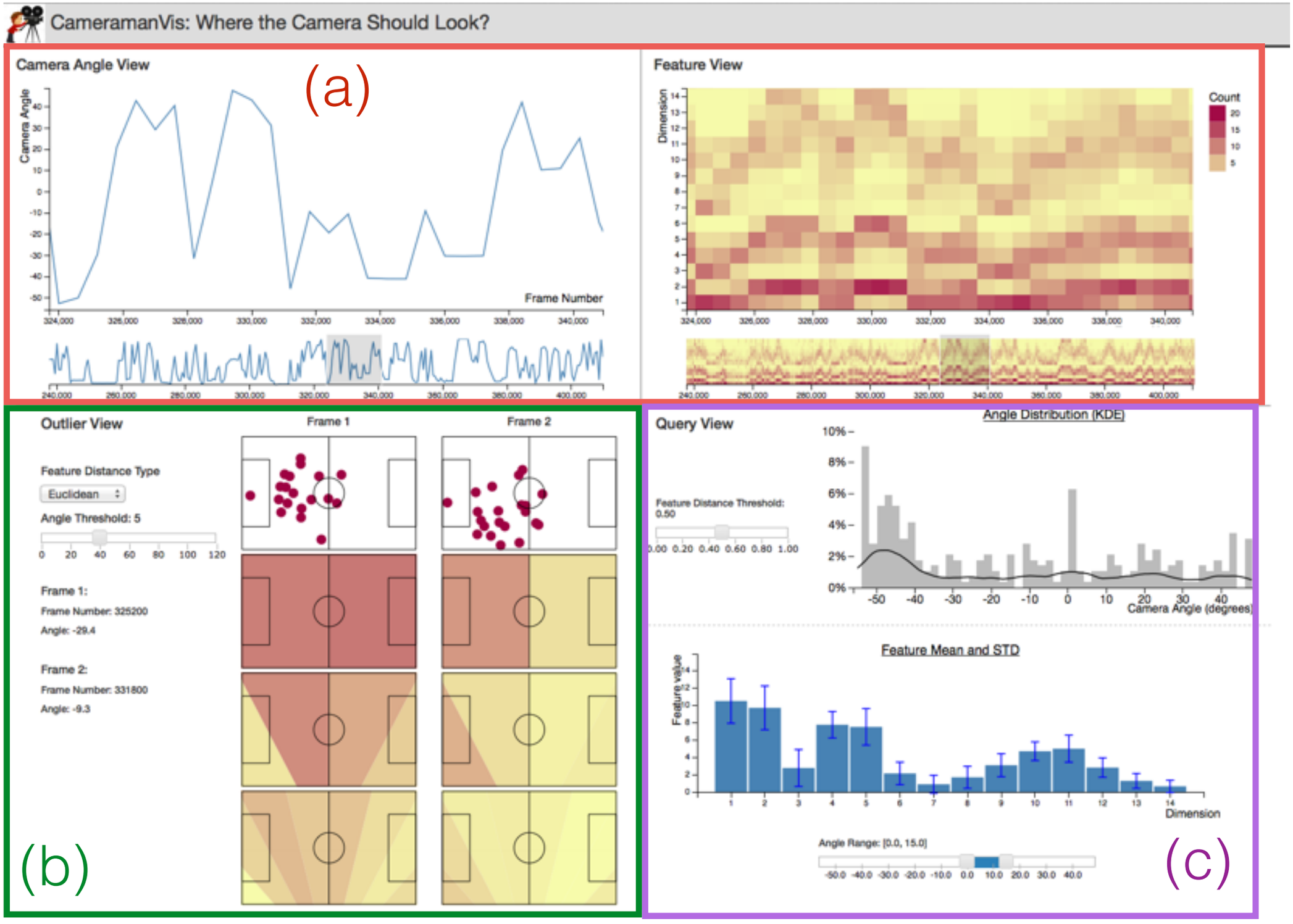
→ Compare



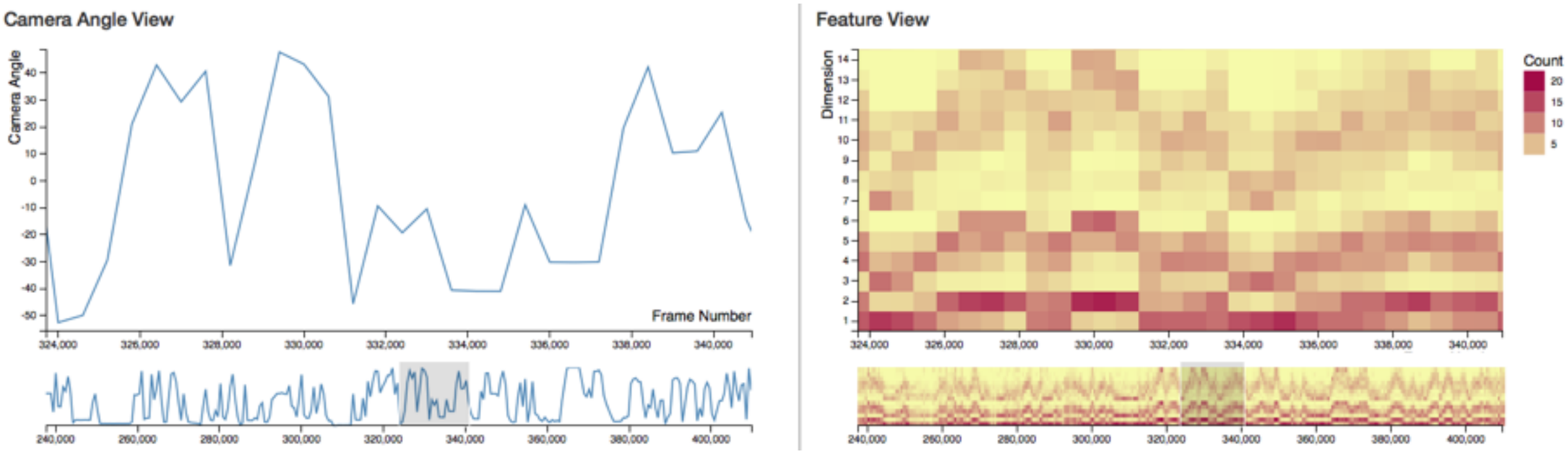
→ Outliers



CameramanVis



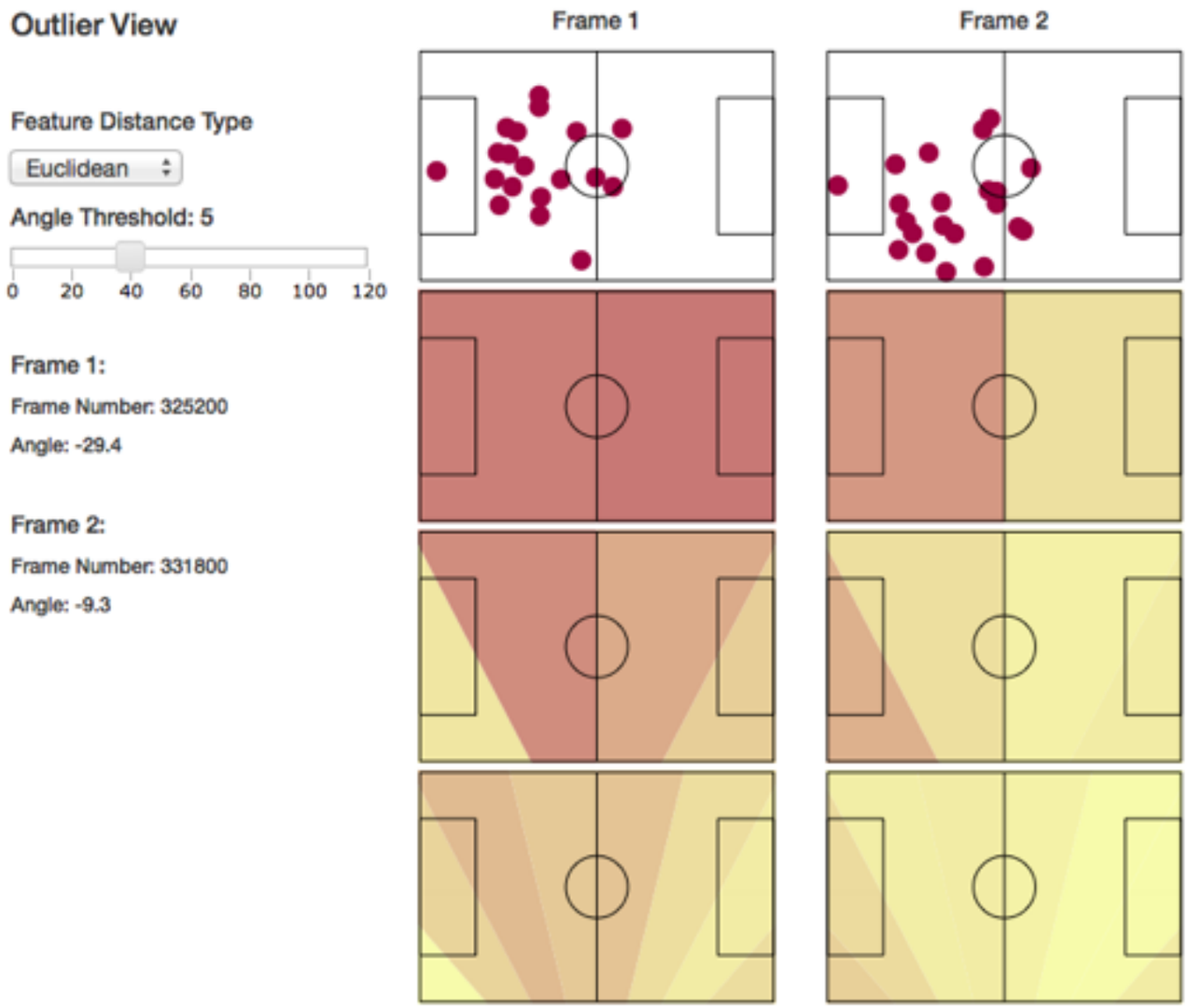
Global View



Principle: overview first, details on demand

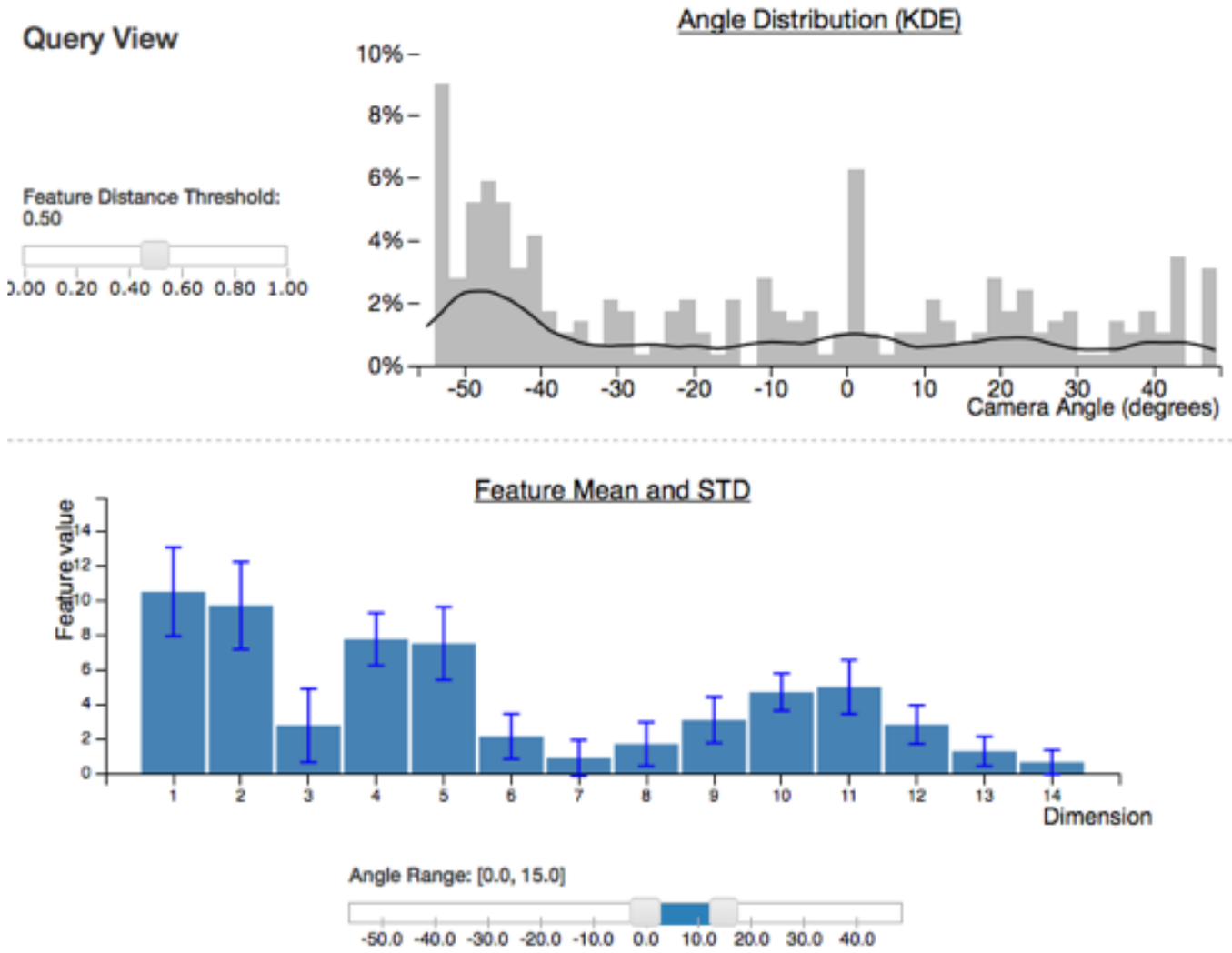
Coding : shape and colour

Outlier View



Principle: side-by-side comparison of small multiple views
Coding : spatial position and colour
Multiple distance types
Interactive with camera angle view

Query View



Scientific style

Angle : histogram, kernel density estimation (KDE)

Feature: bar chart with error bar

Interactive with feature view

Demo video

Conclusion & Future work

Conclusion:
Design a system to understand camera angle and player location relation in soccer data
Benefit our research in the long term

Future work:
User feedback
Fine turn the interface (colour, size)

Thanks!