

Data Visualisation

CONTINUOUS ASSESSMENT 3

Summary

This project will contribute 10% towards the final mark for this module.

This assignment must be completed before 23:55 on 27th March 2022.

Note that the data provided in this assignment is confidential and should not be used or shared outside of this assignment.

Outline

For the third continuous assessment in Data Visualisation you are required to create a static visualisation in the form of a single A4 page report for an individual football player that informs the player of their physical and tactical performance in one half of a football game.

Data

The data for this CA is available on Moodle and in the form of a csv file with the field names in the first row. This data relates to a professional football match. The file relates to the first half of a game with positional and speed data for 11 players of one team.

The first column gives a time ID and the remaining columns giving the horizontal positions, vertical positions and speed for each numbered player during a football match. The file contains 68,509 rows in time order with one second of play being represented by 25 consecutive points.

The X position value gives the distance in metres from the centre of the pitch along the length of the pitch and the Y position gives the distance in metres from the centre of the pitch along the width of the pitch. Note that the pitch is 104 metres long and 68 metres wide and that the team are playing from left to right as you look at the pitch in landscape with the negative X position value on the left hand side and the positive X position value on the right hand side. Positive Y values are above the centre and negative Y values below it. The speed is measured in metres per second.

Note that the goalkeeper is the first player in the data set.

Requirements

You are required to create a static visualisation in the form of a single colour A4 page report for an individual football player that informs the player of their physical and tactical performance in the first half of a game. You can choose any of the players except the goalkeeper.

You should assume that the player is not very mathematical and will respond best to visual indications of performance as opposed to numerical ones.

You can also assume that the player is interested in comparisons with other team members and with the team in general.

In analysing the player's physical performance, you should bear in mind that sports scientists who work with the players will evaluate measures such as high speed running and sprinting which are the distances travelled by players when their speed is above 5.5 m/s and 7m/s respectively. Note that a jog is categorised as above 3m/s. They are also interested in how these values change over time and comparisons over say 15 minute periods.

In analysing a player's tactical performance, they are interested in the time spent in different parts of the pitch and their average position on the pitch. This is often represented by heat (or density) maps and positional maps.

In creating the report, you should demonstrate your ability to create an effective report through the use of the R technology suite. You should also include the name of the player and a crest of your choice to represent the football club.

Note that you are also required to submit a critical appraisal of your report. This should explain what you consider to be the two strongest characteristics and/or components of the report and why you believe them to be of a high quality. Please also outline one weakness of your report.

Before deciding on appropriate visual encodings you should investigate what current commercial applications in the space provide as feedback to users. To explore interesting visual encodings, you should search online looking at organisations such as Statsports, Catapult Sports, VX Sports and even BBC and Sky Sports.

Deliverables

You are required to complete the following:

1. A pdf of the report you have created. This can be generated through an export from RStudio.
2. The R Script file used to generate the report. This should include any particular instructions needed to run the file to recreate the report including any other data files you may have used in the creation of the report such as a pitch image file or a crest.

- A single word document named "Critique" that explains what you consider to be the two strongest characteristics and/or components of the report and why you believe them to be of a high quality. Please also outline one weakness of your report.

Indicative Marking Scheme

Design: 15%
 Visualisation Elements and Layout: 30%
 Technical Implementation: 40%
 Exported PDF's & Source Files: 5%
 Critique: 10%

Rubric

Grade (%)	Description
80+	CA element demonstrates mastery of subject matter with novel/original work applied to a complex problem. Data is imported correctly and has been appropriately structured. Visualisation of data is accurate, complete, thoroughly explained, and appropriate with clear link to aims. Functionality in dashboard shows original thinking and implementation beyond what was learned in course. Document is well-structured, complete with detailed version history.
70-79	CA element demonstrates thorough understanding of subject matter. Data is imported correctly and has been appropriately structured. Visualisation of data is accurate, complete, thoroughly explained, and appropriate with clear link to aims. Functionality is well developed with only minor issues. Document is well-structured, complete with complete version history.
60-69	CA element demonstrates good understanding of subject matter. Data is imported correctly and has been appropriately structured. Visualisation of data is accurate, substantially complete, well explained, and appropriate with good link to aims. May be missing some appropriate analysis. Document is reasonably structured, substantially complete and well delivered.
50-59	CA element demonstrates reasonable understanding of subject matter. Visualisation of data is accurate, partially complete, reasonably well explained, and appropriate with some link to aims. May be missing some appropriate analysis and links to aims and objectives may not be complete. Document is adequately structured, mostly complete and reasonably well delivered.
40-49	CA element demonstrates partial understanding of subject matter. Functionality is relatively simple allowing very basic exploration. Basic but incomplete visualisation with significant omissions. Poor link to aims and objectives. Document missing some key elements.

0-39	CA element demonstrates little understanding of subject matter. Little evidence of exploration of problem Incomplete visualisation based entirely on functionality provided in class with weak links to aims. Documentation poor and missing significant elements.
0-29	CA element demonstrates almost no understanding of subject matter. No serious attempt to address the problem.

Plagiarism

PLEASE PAY SPECIAL ATTENTION TO THE ISSUE OF PLAGIARISM. The DkIT policies are available at

https://www.dkit.ie/system/files/academic_integrity_policy_and_procedures.pdf

in summary, all work submitted by learners for assessment purposes, or for written or oral publication, must be their own work. Where this is informed by the work of others, the source must be properly referenced using the accepted norms and formats of the appropriate academic discipline.

Late Submission

The policy for late submission is available at the link below. Any legitimate late submission must be accompanied by explanation and supporting documentation as per the policy.

https://www.dkit.ie/system/files/continuous_assessment_procedures_document_v4.pdf