Xi'an Jiaotong-Liverpool University
西交利物浦大學

XJTLU Entrepreneur College (Taicang) Cover Sheet

Module code and Title	**DTS204TC Data Visualisation**
School Title	**School of AI and Advanced Computing**
Assignment Title	**Coursework**
Submission Deadline	
Final Word Count	**N/A**
If you agree to let the university use your work anonymously for teaching and learning purposes, please type **"yes"** here.	

I certify that I have read and understood the University's Policy for dealing with Plagiarism, Collusion and the Fabrication of Data (available on Learning Mall Online). With reference to this policy I certify that:

- My work does not contain any instances of plagiarism and/or collusion.
  My work does not contain any fabricated data.

By uploading my assignment onto Learning Mall Online, I formally declare that all of the above information is true to the best of my knowledge and belief.

Scoring – For Tutor Use	
Student ID	

Stage of Marking	**Marker Code**	**Learning Outcomes Achieved (F/P/M/D) (please modify as appropriate)**			**Final Score**
		A	**B**	**C**	
1st Marker – red pen					
Moderation – green pen	**IM Initials**	The original mark has been accepted by the moderator (please circle as appropriate):			Y / N
		Data entry and score calculation have been checked by another tutor (please circle):			Y
2nd Marker if needed – green pen					

For Academic Office Use			**Possible Academic Infringement (please tick as appropriate)**	
Date Received	**Days late**	**Late Penalty**	☐ **Category A**	Total Academic Infringement Penalty (A,B, C, D, E, Please modify where necessary) _____
			☐ **Category B**	
			☐ **Category C**	
			☐ **Category D**	
			☐ **Category E**	

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西交利物浦大学创业学院（太仓）封面

模块代码和标题DTS204TC数据可视化	
学校名称	人工智能与高级计算学院
作业标题 课程作业提交截止日期 最终字数 N/A 如果您同意让大学匿名使用您的作品用于教学目的，请在此处输入“是”。	

本人证明已阅读并理解大学处理剽窃、串通及捏造资料的政策（可在Learning Mall Online上查阅）。根据本政策，我保证：

- 我的作品不包含任何剽窃和/或串通的情况。
  我的作品不包含任何捏造的数据。

通过将我的作业上传到Learning Mall Online，我正式声明，据我所知，上述所有信息都是真实的。

学生证		评分 - 供导师使用			
阶段标记	芯片 Code	取得的学习成果 （F/P/M/D）（请酌情修改） A	B	C	最后 Score
1标记 – 红色 pen					
适度 – 绿笔	IM 缩写	原件已被主持人接受（请酌情圈出）：			是/否
		数据输入和分数计算已通过以下检查另一位导师（请圈出）：			Y
2标记如果需要 – 绿色 pen					
用于学术办公室 可能的学术侵权（请酌情勾选）		收到日期			
Days late	Late 罚款	☐ A类 ☐ B类 ☐ C类 ☐ D ☐类 E类			学术侵权处罚总额（A、B、C、D、E，必要时请修改）

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DTS204TC Data Visualisation
Final Coursework

Submission deadline: **23:59 Beijing Time, May 23rd, 2024**

Percentage in final mark: 100%

Learning outcomes assessed: A, B, C, D, E, F, G

Late policy: 5% of the total marks available for the assessment shall be deducted from the assessment mark for each working day after the submission date, up to a maximum of five working days

Risks:

- Please read the coursework instructions and requirements carefully. Not following these instructions and requirements may result in loss of marks.
- Plagiarism results in award of ZERO mark.
- The formal procedure for submitting coursework at XJTLU is strictly followed. Submission link on Learning Mall will be provided in due course. The submission timestamp on Learning Mall will be used to check late submission.

Overview

In this coursework, you are expected to complete two tasks. For task 1, you need to complete a data visualisation and submit a dataset, an HTML file, a video that can show your visualisation and other potential materials. For Task 2, you need to submit a form (PDF).

Task 1 (60 marks)

You are given a public dataset of The BWF Badminton Rankings – Men's Single. Based on this dataset, please design and create a data visualisation to illustrate the distribution of the top 20 by country and region. Here are task specifications:

- **Target**: You are asked to use D3.js to create **one** visualisation that presents the following information:
  - In the main visualization results, you need to present the **number of players** from different countries or regions in the *top 20* and the **sum of points** for players from each country or region within the top 20."
  - The **highest ranking** of each country or region within the top 20 should be presented by the interaction.
  - The **names and corresponding scores** of players from each country or region within the top 20 should be presented by the interaction.

- **Basic Requirements:**
  - Get necessary data from the dataset correctly.
  - Choose the type of the visualisation
  - Design marks and channels.
  - Complete a basic visualisation with suitable designs (scale, axes, text, colour designs etc).
  - Interactions are necessary. When the user moves the mouse in your visualisation, the corresponding mark should be highlighted and show the **highest ranking, names and corresponding scores** of athletes. For example, if you move the mouse to the mark of China, it will show a tooltip that contains the **highest ranking, names and corresponding scores** of athletes in China within the top 20.
  - Animations are necessary to show how the visualisation is generated.

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DTS204TC 数据可视化期末课程

投稿截止日期：北京时间2024年5月23日23：59

最终得分百分比：100%

评估的学习成果：A、B、C、D、E、F、G

逾期政策：在提交日期后的每个工作日，最多五个工作日，将从评估分数中扣除可用于评估的总分的 5%

风险：

- 请仔细阅读课程说明和要求。不遵守这些说明和要求可能会导致丢分。
- 抄袭导致零分。
- 严格遵守西交利物浦大学提交课程作业的正式程序。Learning Mall的投稿连结将于稍后提供。Learning Mall 上的提交时间戳将用于检查延迟提交。

概述

在本课程中，您需要完成两项任务。对于任务 1，您需要完成数据可视化并提交数据集、HTML 文件、可以显示可视化的视频和其他潜在材料。对于任务 2，您需要提交表格 （PDF）。

任务 1（60 分）

您将获得世界羽联羽毛球排名 - 男子单打的公共数据集。基于此数据集，请设计并创建数据可视化，以说明按国家和地区划分的前 20 名的分布情况。以下是任务规范：

- 目标：系统要求您使用 D3.js 创建一个可视化效果，该可视化效果显示以下信息：
  - o 在主要可视化结果中，您需要显示前 20 名中来自不同国家或地区的玩家数量，以及前 20 名中每个国家或地区的玩家的积分总和。 o 前 20 名中每个国家或地区的最高排名应通过交互呈现。
  - o 前 20 名中每个国家或地区的玩家的姓名和相应的分数应通过互动呈现。

- 基本要求：
  - o 正确从数据集中获取必要的数据。
  - o 选择可视化的类型
  - o 设计标志和通道。
  - o 使用合适的设计（比例、轴、文本、颜色设计等）完成基本可视化。
  - o 互动是必要的。当用户在可视化中移动鼠标时，应突出显示相应的标记，并显示运动员的最高排名、姓名和相应的分数。例如，如果将鼠标移动到中国标记，则

    将显示一个工具提示，其中包含前 20 名中中国运动员的最高排名、姓名和相应分数。

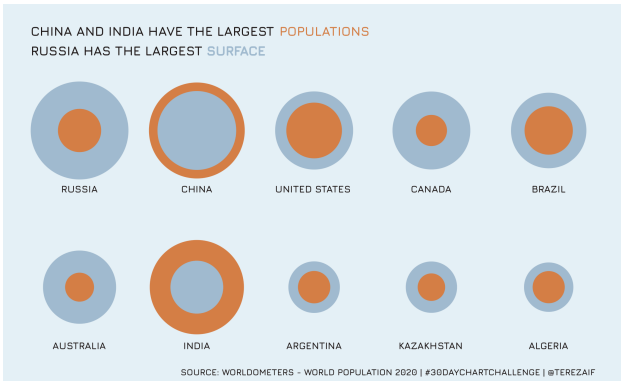
  - o 动画对于显示可视化是如何生成的是必要的。

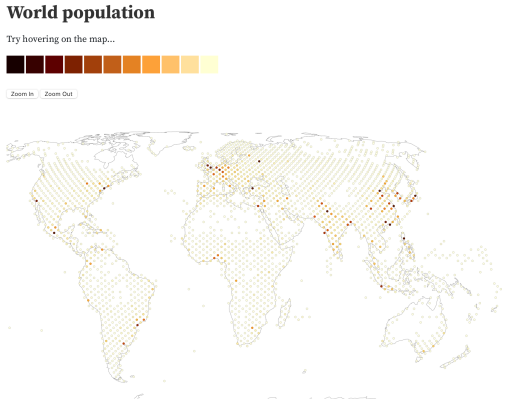
- **Submissions (a zip file (ID_Name_DTS204TC_CW.zip) which contains following documents):**
  - The original ***dataset***.
  - ***HTML file*** with your codes.
  - ***Videos (mp4)*** or ***Screenshot*** that can show all elements in your visualisation.
  - *If you write your JS codes and CSS outside the HTML file, you need to provide your ***JS and CSS files***.
  - *If you set up the D3 environment by local route, you need to submit the "***d3.min.js***"

- **Additional Notes:**
  - You can only use D3.js, JavaScript and HTML. You will get marks deducted if you use additional libraries to complete this task.
  - Your submitted dataset should be the original one, which means you cannot change the data in the dataset.
  - Suitable comments are necessary for your codes. It also affects your marks.
  - The screenshot is acceptable only if your visualisation does not contain any animation and interaction.
  - The way you choose for writing your JS and CSS codes will not affect your final marks.
  - Please make sure you upload the CW to the LMO correctly.
  - Your report can **only** consist following contents:
    - If your codes do not work, explain what you have done.
    - If you use other libraries, list your libraries in the report.
    - If you use 3D marks in your visualisation, describe your 3D design and explain why you choose 3D marks.

Task 2 (40 marks)

Here are two data visualisations of the World Population by Tereza Iofciu and Agustin.
https://observablehq.com/@terezaif/world-population-density-by-country
https://observablehq.com/@aguformoso/world-population





- **Target**: Please analyse and compare these two visualisations. Then please complete the attached form "Task2.docx", which contains following contents:
  - Dataset types, Data Types, Attributes and Corresponding Types, Actions.
  - List Marks and Channels of each visualisation. Describe the design of Channels.
  - Describe Potential interaction view of each visualisation.
  - Limitations of each visualisation (marks, channels, interactions …).
  - Compare these two visualisations, choose the one you think is better and explain reasons.

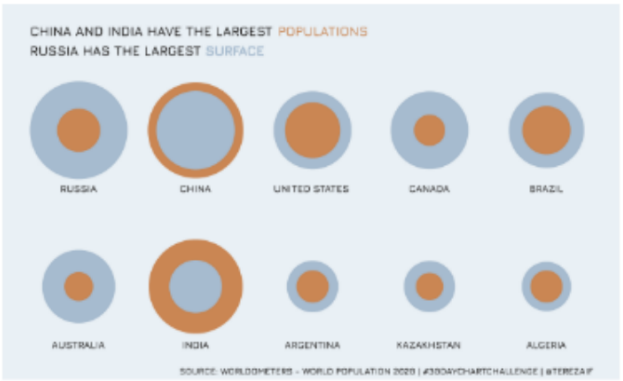
- **Submission:** You should submit a PDF file that converted from the completed "*Task2.docx"*.

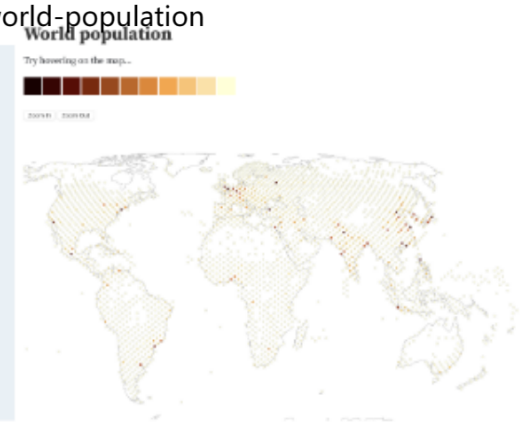
- 提交内容（包含以下文件的 zip 文件 （ID_Name_DTS204TC_CW.zip）：
  原始数据集。
  - 带有您的代码的 HTML 文件。
  - 可以显示可视化中所有元素的视频 （mp4） 或屏幕截图。
  - *如果您在 HTML 文件之外编写 JS 代码和 CSS，则需要提供 JS 和 CSS 文件。
  - *如果您通过本地路由设置 D3 环境，则需要提交“d3.min.js”

- 附注事项:
  - 您只能使用 D3.js、JavaScript 和 HTML。如果您使用其他库来完成此任务，您将被扣除分数。
  - 您提交的数据集应该是原始数据集，这意味着您无法更改数据集中的数据。
  - 您的代码需要适当的注释。它还会影响您的分数。
  - 仅当您的可视化不包含任何动画和交互时，屏幕截图才可接受。
  - 您选择编写 JS 和 CSS 代码的方式不会影响您的最终分数。
  - 请确保将化学武器正确上传到改性活生物体。
  - 您的报告只能包含以下内容:
    - 如果您的代码不起作用，请解释您做了什么。
    - 如果您使用其他库，请在报告中列出您的库。
    - 如果您在可视化中使用 3D 标记，请描述您的 3D 设计并解释您选择 3D 标记的原因。

任务 2（40 分）

以下是 Tereza Iofciu 和 Agustin 对世界人口的两个数据可视化。
https://observablehq.com/@terezaif/world-population-density-by-country https://observablehq.com/@aguformoso/world-population





- 目标：请分析和比较这两个可视化效果。然后请填写所附的表格“Task2.docx”，其中包含以下内容：
  - 数据集类型、数据类型、属性和相应的类型、操作。
  - 列出每个可视化的标记和通道。描述通道的设计。
  - 描述每个可视化的潜在交互视图。
  - 每个可视化的局限性（标记、渠道、交互.....
  - 比较这两种可视化，选择您认为更好的一种并解释原因。

- 提交：您应该提交一个从完成的“Task2.docx”转换而来的 PDF 文件。

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Generic Marking Criteria

Grade	Point Scale		Criteria to be satisfied
A	81+	First	➢ Outstanding work that is at the upper limit of performance. ➢ Work would be worthy of dissemination under appropriate conditions. ➢ Mastery of advanced methods and techniques at a level beyond that explicitly taught. ➢ Ability to synthesise and employ in an original way ideas from across the subject. ➢ In group work, there is evidence of an outstanding individual contribution. ➢ Excellent presentation. ➢ Outstanding command of critical analysis and judgment.
B	70 - 80	First	➢ Excellent range and depth of attainment of intended learning outcomes. ➢ Mastery of a wide range of methods and techniques. ➢ Evidence of study and originality clearly beyond the bounds of what has been taught. ➢ In group work, there is evidence of an excellent individual contribution. ➢ Excellent presentation. ➢ Able to display a command of critical thinking, analysis and judgment.
C	60 - 69	Upper Second	➢ Attained all the intended learning outcomes for a module or assessment. ➢ Able to use well a range of methods and techniques to come to conclusions. ➢ Evidence of study, comprehension, and synthesis beyond the bounds of what has been explicitly taught. ➢ Very good presentation of material. ➢ Able to employ critical analysis and judgement. ➢ Where group work is involved there is evidence of a productive individual contribution
D	50- 59	Lower Second	➢ Some limitations in attainment of learning objectives but has managed to grasp most of them. ➢ Able to use most of the methods and techniques taught. ➢ Evidence of study and comprehension of what has been taught ➢ Adequate presentation of material. ➢ Some grasp of issues and concepts underlying the techniques and material taught. ➢ Where group work is involved, there is evidence of a positive individual contribution.
E	40 - 49	Third	➢ Limited attainment of intended learning outcomes. ➢ Able to use a proportion of the basic methods and techniques taught. ➢ Evidence of study and comprehension of what has been taught but grasp insecure.

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通用评分标准

年级	点刻度		需要满足的标准
A	81+	第一	Ø 处于业绩上限的优秀作品。 Ø 在适当的条件下，作品值得传播。 Ø 掌握超出明确教授水平的高级方法和技术。 Ø 能够以原创的方式综合和运用来自整个主题的想法。 Ø 在小组工作中，有突出的个人贡献的证据。 Ø 出色的演示。 Ø 出色的批判性分析和判断能力。
B	70 - 80	第一	Ø 实现预期学习成果的广度和深度都很好。 Ø 掌握各种方法和技术。 Ø 研究和独创性的证据明显超出了所教内容的范围。 Ø 在小组工作中，有证据表明个人贡献非常出色。 Ø 出色的演示。 Ø 能够表现出批判性思维、分析和判断的能力。
C	60 - 69	上二	Ø 达到模块或评估的所有预期学习成果。 Ø 能够运用多种方法和技术得出结论。 Ø 超出明确教授范围的学习、理解和综合的证据。 Ø 非常好的材料介绍。 Ø 能够运用批判性分析和判断。 Ø 在涉及小组工作的地方，有证据表明个人做出了富有成效的贡献
D	50- 59	下秒	Ø 在实现学习目标方面存在一些局限性，但已设法掌握了其中的大部分。 Ø 能够使用所教授的大部分方法和技术。 Ø 学习和理解所教内容的证据 Ø 充分展示材料。 Ø 对所教授的技术和材料背后的问题和概念有一定的掌握。 Ø 在涉及小组工作的情况下，有证据表明个人做出了积极的贡献。
E	40 - 49	第三	Ø 预期学习成果的实现有限。 Ø 能够使用所教授的基本方法和技术的一部分。 Ø 学习和理解所教内容的证据，但掌握不安全。

			➢ Poorly presented. ➢ Some grasp of the issues and concepts underlying the techniques and material taught, but weak and incomplete.
F	0 - 39	Fail	➢ Attainment of only a minority of the learning outcomes. ➢ Able to demonstrate a clear but limited use of some of the basic methods and techniques taught. ➢ Weak and incomplete grasp of what has been taught. ➢ Deficient understanding of the issues and concepts underlying the techniques and material taught. ➢ Attainment of nearly all the intended learning outcomes deficient. ➢ Lack of ability to use at all or the right methods and techniques taught. ➢ Inadequately and incoherently presented. ➢ Wholly deficient grasp of what has been taught. ➢ Lack of understanding of the issues and concepts underlying the techniques and material taught. ➢ Incoherence in presentation of information that hinders understanding.
G	0	Fail	➢ No significant assessable material, absent, or assessment missing a "must pass" component.

			Ø 呈现不佳。 Ø 对所教授的技术和材料背后的问题和概念有一定的了解，但薄弱且不完整。
F	0 - 39	Fail	Ø 仅获得少数学习成果。 Ø 能够展示对所教授的一些基本方法和技术的清晰但有限的使用。 Ø 对所教内容的掌握薄弱和不完整。 Ø 对所教授的技术和材料背后的问题和概念缺乏理解。 Ø 几乎所有预期学习成果的实现都不足。 Ø 完全缺乏使用能力或教授正确的方法和技术。 Ø 呈现不充分且语无伦次。 Ø 完全缺乏对所教内容的掌握。 Ø 缺乏对所教授的技术和材料背后的问题和概念的理解。 Ø 信息呈现的不连贯性阻碍了理解。
G	0	Fail	Ø 没有重要的可评估材料、缺失或评估缺少“必须通过”部分。

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Rubric

Tasks	100	Components	Description	Maximum Credit	Mark
Task 1	60	Basic Elements Implementation [34 marks]	Data loading & deriving	8	
			Scales with current domain and range for both axes	4	
			Axes with suitable position and length	8	
			Methods that show all attributes in one visualisation	7	
			Text that clearly presents the axes	5	
			Chart title and axes title	2	
		Visualisation Design [7 marks]	Marks design	2	
			Channels design	2	
			Colour choice	3	
		Interaction and Animation [12 marks]	Interaction	8	
			Animation	4	
		Code Quality [7 marks]	Only use required libraries to achieve requirements	2	
			Add clear comments with basic explanations before every part of codes	3	
			Well-documented	2	
Task 2	40	Data & Task Abstraction [10 marks]	Dataset types	2	
			Data types	3	
			Attributes and their types	3	
			Actions	2	
		Visualisation Analysis [20 marks]	Marks and channels	9	
			Interactions	6	
			Limitations	5	
		Comparison [10 marks]	Clearly present the result of the comparison	2	
			Explain reasons	8	
Late Submission?				☐ Yes ☐ No	Days late
Final Marks					

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量规

任务	100	组件	描述	最大信用	Mark
任务 1	60	基本元素实现 [34分]	数据加载和派生	8	
			根据两个轴的当前域和范围进行缩放	4	
			具有合适位置和长度的轴 8 种在一个可视化中显示所有属性的方法	7	
			清晰显示轴的文本	5	
			图表标题和轴标题	2	
		可视化设计 [7 分]	标志设计	2	
			通道设计	2	
			颜色选择	3	
		交互和动画 [12分]	互动	8	
			动画	4	
		代码质量 [7 分]	仅使用必需的库来满足要求	2	
			在代码的每个部分之前添加带有基本解释的清晰注释	3	
			有据可查	2	
任务 2	40	数据和任务抽象 [10分]	数据集类型	2	
			数据类型	3	
			属性及其类型	3	
		可视化分析 [20分]	行动	2	
			唛头和渠道	9	
			相互 作用	5	
			局限性	5	
		比较 [10分]	清楚地呈现比较结果	2	
			解释原因	8	
			延迟提交?	£ 是 £ No	Days late
			最终分数		