

Féidearthachtaí as Cuimse  
Infinite Possibilities

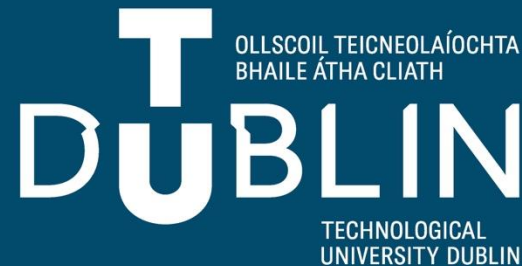
# Programming for Analytics

## Lecture 10: Advanced Visualisation

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# Overview

- What is Seaborn?
- Common Plots
- New Plots
- Grids
- Styles and Themes

# What is Seaborn?

- High-level statistical visualisation
- Works well with pandas DataFrames
- Built on top of Matplotlib

# Importing Required Libraries

```
import seaborn as sns
```

```
import matplotlib.pyplot as plt
```

```
import pandas as pd
```

```
import numpy as np
```

# Load the Malazan Visualisation Dataset

```
df =  
pd.read_csv('malazan_visualisation_dataset.csv')  
df.head()
```

# Set a Theme

```
sns.set_theme(style='darkgrid')
```

Themes: darkgrid, whitegrid, dark, white, ticks

# Scatterplot Example

```
sns.scatterplot(data=df,  
x='Combat_Skill',  
y='Power_Level')  
plt.show()
```

# Activity: Commander Power vs Magic

- Plot Combat\_Skill vs Arcane\_Mastery
- Colour by Army



# Histogram Example

```
sns.histplot(df['Magic_Aptitude'], kde=True)  
plt.show()
```

# KDE Plot

- kernel density estimate
- represents the data using a continuous probability density curve in one or more dimensions.
- Relative to a histogram, KDE can produce a plot that is less cluttered and more interpretable, especially when drawing multiple distributions.

# KDE Example

```
sns.kdeplot(df['Morale'],  
shade=True)  
plt.show()
```

# Activity: Morale Analysis

- Plot morale distribution
- Identify high-morale commanders

# Boxplot Example

```
sns.boxplot(data=df, x='Army',  
y='Combat_Skill')
```

# Activity: Combat Skill by Army

- Which army produces the strongest fighters?
- What is the variance of combat skills throughout all armies?
- Answer those questions with boxplots!

# Heatmap Example

```
sns.heatmap(df.corr(),  
annot=True, cmap='coolwarm')
```

# Activity: Correlations

- Identify the strongest correlations
- Explain unusual patterns



# Pairplot Example

```
sns.pairplot(df)  
plt.show()
```

# Activity: Pairplot Analysis

- Find clusters or outliers

# Violin Plot Example

```
sns.violinplot(data=df,  
x='Army', y='Magic_Aptitude')
```

# Activity: Army Variability

- Which army has highest power level spread?

# Joinplot Example

```
sns.jointplot(data=df,  
x='Arcane_Mastery',  
y='Strategic_Intellect',  
kind='hex')
```

# Activity: Strategy vs Magic

- Are high mages good strategists?

# FacetGrid Example

```
g = sns.FacetGrid(df,  
col='Army')  
  
g.map(sns.histplot,  
'Close_Combat')
```

# Activity: Army Histograms

- Which army fights best in melée?



# Clustermap Example

```
sns.clustermap(df.corr(),  
cmap='viridis', annot=True)
```

# Activity: Cluster Interpretation

- Which stats cluster together?

# Styles and Themes

```
sns.set_style('whitegrid')  
sns.set_palette('inferno')
```

# Activity: Re-style a Chart

- Recreate a plot with a new palette
- Explain benefits

# Complex Overlay Example

```
sns.boxplot(...)
```

```
sns.swarmplot(...)
```

- Use swarmplot to show outliers

# Activity: Outlier Detection

- Identify extreme commanders

# Commander Dashboard Example

- Plot scatter, heatmap, violin, facegrid
- Tell a story about commander strengths

# Workflow

- Load data
- Explore
- Plot
- Interpret



# Final Questions

- Which commanders are strongest overall?
- Which armies dominate different attributes?

Questions?