## **CSE 5520 – Data Visualization and Communication**

Schedule for the rest of semester

Categorical variable
Discrete variable
Continuous variable

**My Project** 

What data?

What visualization?

PREDICTION
CAUSALITY
ASSOCIATION

What analysis?

Biology, Engineering, Business, NBA/NFL/MLB



#### **Bayesian inference**

**Basic** 

Monte Carlo

**MCMC** 

**Bayesian MCMC** 



Sentiment analysis



#### Sampling

Monte Carlo

#### Classification

Information Gain

KNN

Gaussian mixed model

### Clustering

Hierarchical K-means

#### **Network Analysis**

Directional Non-directional

network

#### **Kernel Density Estimate**



Discrete to continuous

#### **Hypothesis Testing**



t- Test p-value

**ROC** 

**FDR** 

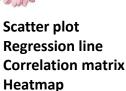
## χ² Test

$$\chi^2 = \sum rac{\left(O_i - E_i
ight)^2}{E_i}$$

#### **Correlation Analysis**

Linear regression Pearson correlation

Non-linear regression



#### **Probability Distribution**



Histogram Boxplot Violinplot Bernoulli distribution Poisson distribution Gamma distribution Beta distribution

## **Data Visualization Road Map**

# **CSE 5520 – Data Visualization and Communication** (Planned)



#### **Grading Policy**

0/1 /\/\\\\

12/19 (Sun)

Grading will be based on student's performance in five areas: participation (5%), homework (25%), quiz (15%), project (15%), in-class presentation (20%) and term paper (20%).

#### Schedule (14 weeks)

| 9/1 (wed)   | ran semester begins.              |
|-------------|-----------------------------------|
| 10/20 (Wed) | Project proposal abstract due.    |
| 10/27 (Wed) | Project proposal begins*.         |
| 11/21-11/27 | Thanksgiving Recess               |
| 12/1 (Wed)  | Student Presentation              |
| 12/8 (Wed)  | Student Presentation; Class ends. |

Eall comporter haging

Final exam ends; Term paper due.

# Sunday Monday Tuesday Wednesday Thursday Friday Saturday 2 3 4 6 7 8 9 10 11 2 13 14 15 16 17 18

Sept

| Sunday | Monday   | Tuesday | Wednesday | Thursday | Friday | Saturday |  |
|--------|--|---------|-----------|----------|--------|----------|--|
|        |  |         |           |          | 1      | 2        |  |
| 3      | 4  | 5       | 6         | 7        | 8      | 9        |  |
| 10     | 11   | 12      | 13        | 14       | 15     | 16       |  |
| 17     | 18   | 19      | 20        | 21       | 22     | 23       |  |
| 24     | 25   | 26      | 27        | 28       | 29     | 30       |  |
| 31     | <del>                                     </del> | 1       |           |          |        |          |  |

Oct

|        | NOV    |         |           |          |        |          |  |  |  |  |  |
|--------|--------|---------|-----------|----------|--------|----------|--|--|--|--|--|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |  |  |  |  |  |
|        | 1      | 2       | 3         | 4        | 5      | 6        |  |  |  |  |  |
| 7      | 8      | 9       | 10        | 11       | 12     | 13       |  |  |  |  |  |
| 14     | 15     | 16      | 17        | 18       | 19     | 20       |  |  |  |  |  |
| 21     | 22     | 23      | 24        | 25       | 26     | 27       |  |  |  |  |  |
| 28     | 29     | 30      | +         |          |        | +        |  |  |  |  |  |
|        |        |         |           |          |        |          |  |  |  |  |  |

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|---------|-----------|----------|--------|----------|
|        |        |         |           | 2        | 3      | 4        |
| 5      | 6      | 7       |           | 9        | 10     | 11       |
| 12     | 13     | 14      | 15        | 16       | 17     | 18       |
|        | 20     | 21      | 22        | 23       | 24     | 25       |
| 26     | 27     | 28      | 29        | 30       | 31     | +        |

<sup>\*</sup> Specific date and time may change and the student presentation ordering will be determined FCFS. Team size should be 2. Term paper should be solo.

# CSE 5520 – Data Visualization and Communication (Revised)



#### Schedule (14 weeks)

| 11/17 (Wed) | R & ggplot + Dash; NLP visualization |
|-------------|--------------------------------------|
| 11/21-11/27 | Thanksgiving Recess                  |
| 12/1 (Wed)  | Bayesian MCMC; Quiz                  |
| 12/8 (Wed)  | Final Presentation I                 |
| 12/13 (Mon) | Final Presentation II                |
| 12/19 (Sun) | Term paper due.                      |

**Note:** 12/13 (Mon) will be 6:00 - 8:00 pm using the university scheduled final exam period.

| Sept   |         |                       |   |  |   |  |  |  | Oct  |  |   |   |
|--------|---------|-----------------------|---|--|---|--|--|--|--|--|---|---|
| Monday | Tuesday | Wednesday             | Thursday  | Friday   | Saturday  | Sunday   | Monday   | Tuesday  | Wednesday  | Thursday   | Friday  | Saturday  |
|        |         |                       | 2   | 3  | 4   |  |  |  |  |  | 1   | 2   |
| 6      | 7       | 8                     | 9   | 10   | 11  | 3  | 4  | 5  | 6  | 7  | 8   | 9   |
|        |         |                       |   |  | $\perp$   | 10   | 11   | 12   | 13   | 14   | 15  | 16  |
| 13     | 14      | 15                    | 16  | 17   | 18  |  |  |  |  |  |   |   |
|        |         |                       |   |  |   | 17   | 18   | 19   | 20   | 21   | 22  | 23  |
| 20     | 21      | 22                    | 23  | 24   | 25  |  |  |  |  |  |   |   |
|        |         |                       |   |  |   | 24   | 25   | 26   | 27   | 28   | 29  | 30  |
| 27     | 28      | 29                    | 30  |  |   | 31   |  |  |  |  |   |   |
|        | 13      | 6 7<br>13 14<br>20 21 | Monday Tuesday Wednesday  6 7 8  13 14 15  20 21 22 | Monday Tuesday Wednesday Thursday  2 6 7 8 9 13 14 15 16 20 21 22 23 | Menday         Tuesday         Wednesday         Thursday         Friday           2         3           6         7         8         9         10           13         14         15         16         17           20         21         22         23         24 | 2 3 4<br>6 7 8 9 10 11<br>13 14 15 16 17 18<br>20 21 22 23 24 25 | Nonday   Tuesday   Wednesday   Thursday   Friday   Saturday   Saturday   Sunday   Saturday   Sunday   Saturday   Sunday   Saturday   Sunday   Sunday   Sunday   Sunday   Sunday   Sunday   Saturday   Sunday   S | Monday   Tuesday   Wednesday   Thursday   Friday   Saturday   Sa | Monday   Tuesday   Wednesday   Thursday   Friday   Saturday   Saturday   Sunday   Monday   Tuesday | Nonday   Tuesday   Wednesday   Thursday   Friday   Saturday   Saturday   Sunday   Monday   Tuesday   Wednesday | Nonday   Tuesday   Wednesday   Thursday   Friday   Saturday   Saturday   Sunday   Monday   Tuesday   Wednesday   Thursday | Nonday   Tuesday   Wednesday   Thursday   Friday   Saturday   Saturday   Sunday   Monday   Tuesday   Wednesday   Thursday   Friday   Sunday   Monday   Tuesday   Wednesday   Thursday   Friday   Sunday   Monday   Tuesday   Thursday   Friday   Sunday   Sunday   Monday   Tuesday   Thursday   Friday   Sunday   Sunday |

| Nov    |        |         |           |          |        |          | Dec |        |        |         |           |          |        |          |
|--------|--------|---------|-----------|----------|--------|----------|-----|--------|--------|---------|-----------|----------|--------|----------|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |     | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|        | 1      | 2       | 3         | 4        | 5      | 6        |     |        |        |         | 1         | 2        | 3      | 4        |
| 7      | 8      | 9       | 10        | 11       | 12     | 13       |     | 5      | 6      | 7       |           | 9        | 10     | 11       |
| 14     | 15     | 16      | 17        | 18       | 19     | 20       |     | 12     |        | 14      | 15        | 16       | 17     | 18       |
| 21     | 22     | 23      | 24        | 25       | 26     | 27       |     |        | 20     | 21      | 22        | 23       | 24     | 25       |
| 28     | 29     | 30      |           |          |        |          |     | 26     | 27     | 28      | 29        | 30       | 31     |          |

Please sign up for Final Presentation Slots, either 12/8 (Wed) 5:00-7:30 or 12/13 (Mon) 6:00 - 8:00