

# Data Analysis for Game Development

Administrative

IMGD 2905

# Outline

- Background
- Admin Stuff
- Motivation
- Objectives

# Professor Background (Who am I?)

- Mark Claypool (professor, “Mark”)
  - Professor, **Computer Science** and **Interactive Media and Game Development**
- Research interests
  - Multimedia performance
  - Congestion control (protocols, AQM)
  - Wireless networking
  - **Network games**
- Currently playing



# Student Assistant

- Audrey Gross

Year?

Major?

Background?

Playing?



# Student Background (Who are you?)

1. Year?
2. Major?
  - a. IMGD Art or Tech
  - b. Other
3. Background?
  - a. Statistics
  - b. Probability
4. Tools?
  - a. Python
  - b. Excel
5. Platform of Choice?
  - a. Windows
  - b. Linux
  - c. Mac

# Classes



- In-person (yay!)
  - No online options
  - Miss?
    - Slides are available
    - See classmates for notes
- Lectures, Q&A, Intro to projects
- Group work ...
- Let's be flexible!

# Syllabus Stuff

- <http://www.cs.wpi.edu/~imgd2905/d24>
  - Linked from Canvas Web page
- Class: **M, T, Th, F** 10-10:50am
- SA: **Audrey Gross**
- Office hours (Zoom): **T, W, F 12-1pm**
  - Discord, Zoom or in-person
  - Or by appointment
- Email: [claypool@cs.wpi.edu](mailto:claypool@cs.wpi.edu) (me)
- Discord server
  - Invite code on Canvas page

GA



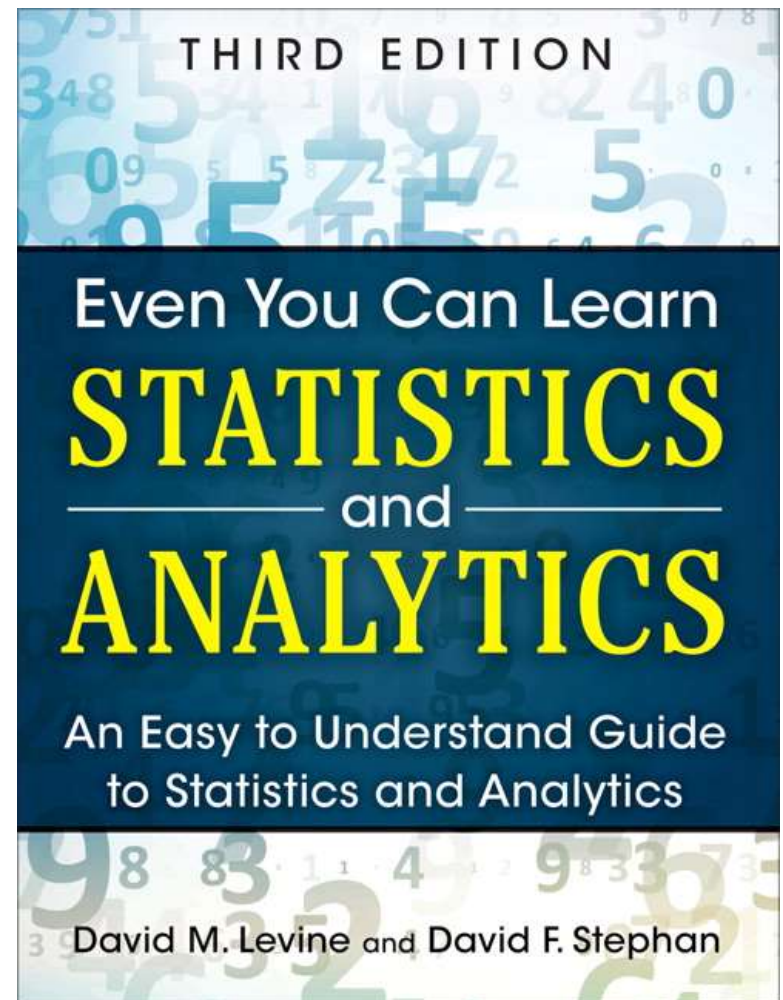
# Text Book

D.M. Levine and D.F. Stephan

“Even You Can Learn  
Statistics and Analytics”

3<sup>rd</sup> ed. *Pearson*, 2015

- Unfortunate name, but good content → depth to provide foundation for analytics
- Good examples, but not game-centric





# Class Topics

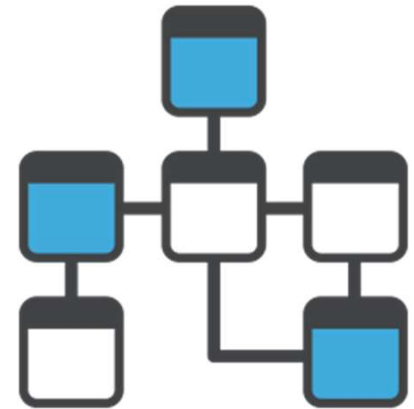
- Data analysis tools and pipeline
- Statistics
- Visualizing and presenting data
- Probability
- Hypothesis testing
- Regression
- Apply topics to game data!
  - Commercial and custom
  - New and old

Greedy Pig



# Course Structure

- Prerequisites
  - College algebra
  - No {programming, stats, probability} expected
  - No game analytics experience required
- Grading
  - Projects (60%)
  - Homework (30%)
  - Participation (10%)
- Turnin on the Canvas Website:
  - <https://canvas.wpi.edu/courses/58182>
  - Authenticate with WPI login and password



<http://idwbi.com/wp-content/uploads/2017/01/database-Schema.png>

# Projects



[https://www.shareicon.net/download/2015/12/06/683311\\_board.svg](https://www.shareicon.net/download/2015/12/06/683311_board.svg)

- 4 projects, 60% of grade total
  - Last project slightly larger
- Do game analysis on actual game data!
- Use game analytics pipeline
  - Typical flow for game (and other) analytics
  - Common tools used for analytics
- Multiple instances of analysis
  - Apply, become skilled with methods of synthesis, interpretation, dissemination
- Project 1 – today!

# Homework

- 3 homework sets, 30% of grade total
- Written problem set
- From the book, Web, made up
- Solve with pencil and paper
- Or calculators
- Or Excel



# Participation

- Showing up to class matters
  - Come to class!
- Being engaged in class matters
  - Don't multi-task!
- Ask questions, answer questions
- 8% of your grade
  - But much bigger indirect effect!



# Playtesting

- Engage with WPI IMGD community
  - Playing and testing each other's games
- Useful for development, research
  - Focus groups
  - Interviews
  - User studies
- **Two** (10-30 min.) sessions
- **2%** of your grade



# Slides

- Download from class page
- PowerPoint and PDF
- Caution! Don't rely upon slides alone! Use them as supplementary material
  - (come to class)

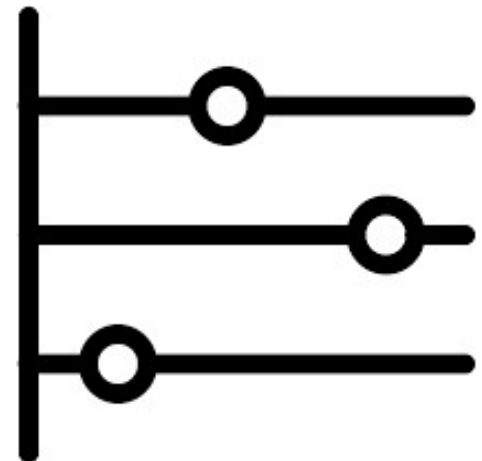


# Timeline

- *Tentative* timeline for dates for exams and projects
  - In order to help you plan

<http://www.cs.wpi.edu/~imgd2905/d24/timeline.html>

- Will notify if update





# Why This Class?

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## Goals

- Gain proficiency using **modern tools** for **data acquisition** and **analysis**
- Understand basic **probability** and **statistics** as it applies to **data analysis**
- Develop skills for **presenting** game data analysis both orally and in written form

## Objectives

- Use **spreadsheet** to **analyze** and visualize game data
- Use **scripting language** to extract and clean data recorded from game
- Apply **summary statistics** to game data
- Compute **probability distributions** for game data
- Write **reports** with graphs and tables illustrating **analysis** of game data
- **Present** game dataset report using appropriate visual aids

# Why This Class? – Other

- WPI IMGD requirements
  - Gotta take **Math/Quantitative Science**
- **Statistics** and **Probability** useful for game design and development
- **Game Analytics** similar to other forms of analytics (e.g., Data Science)
- Game analysis increasingly important (**jobs!**)

<https://www.google.com/search?q=data+analytics+jobs+for+games>

# Jobs

# Game Play Data Analyst, Sony Interactive Entertainment



## • Duties

- Advise, define implement gameplay data to ensure understanding of player experience
- **Provide insights** that impact game design and improve quality
- Create and maintain player segmentation that allows understanding of engagement and spending
- **Mine data sets** and develop dashboard for live service teams, game developers
- Devise and implement A/B experiments to test acquisition, engagement
- **Present findings** and provide recommendations

## • Requirements

- **BS/BA degree** Stats, Math, Econ, CS or related
- Experience with SQL
- Experience with data visualization packages
- Experience with **statistical software**
- Experience with Amazon cloud services
- Have **created and presented visualizations** and insights to various business groups
- Passion for video games preferred

# Jobs

# Analyst, Riot Games



- **Duties**

- Aggregate and analyze petabytes of game data from various sources
- Prep data for deeper analysis and/or reporting
- **Organize collected data** into reliable intel that informs Rioters to improve player experience
- Work with decision-makers to understand goals, identify opportunities, and inform decisions across company
- Create awesome

- **Requirements**

- **BS/BA degree** Stats, Math, Econ, CS or related
  - Graduate degree preferred
- Business savvy
- Technically adept
  - SQL, **Python**
  - **Excel**, PowerPoint
- Communicator
  - **Reports clear, and concise**
  - Presentations to variety of audiences

# Why This Class?

Fun!

