

# 情報可視化論

## 第1回ガイダンス

システム情報学研究科

計算科学専攻

坂本 尚久 陰山 聡

2022年4月12日

# Information Visualization

W01: Guidance

Graduate School of System Informatics

Department of Computational Science

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# Topic and Target

- **Topic**

- The importance of data visualization technique as a key component for the knowledge discovery from complicated and sophisticated Big Data is rising concurrent with recent advances in technology.
- This course discusses visual representation techniques for effective analysis and understanding of the data sets used in various fields.

- **Target**

- The purposes of this course are to understand the elemental design of effective visualizations and to create interactive visualization system for exploring and explaining your data using modern web APIs.

# テーマと目標

## • テーマ

- 近年の爆発的な情報技術の進歩に伴い大規模・複雑化するデータから、そこに隠された特徴や変化を見逃さず、新たな知見を得るための情報可視化技術は、欠かすことのできない基盤技術として重要性が増している。
- 本講義では、様々な分野で活用されるデータを対象として、それらを効果的に分析・理解するための視覚的表現技法について解説する。

## • 目標

- 本講義では、効果的な可視化の基本設計を学び、最近のWeb APIを使って、対話的なデータ探索と説明が可能な可視化システムを作成することを目標とする。

# Schedule

- **General Information**

- Tue. 13:20 - 14:50 Classroom lecture (講義)
- Wed. 13:20 - 14:50 Programming exercise (演習)

- **Lecture Room**

- Information Science and Technology Center (情報基盤センター・分館)
  - Tue. Seminar Room 2 (第2演習室)
  - Wed. Seminar Room 1 (第1演習室)

# Schedule

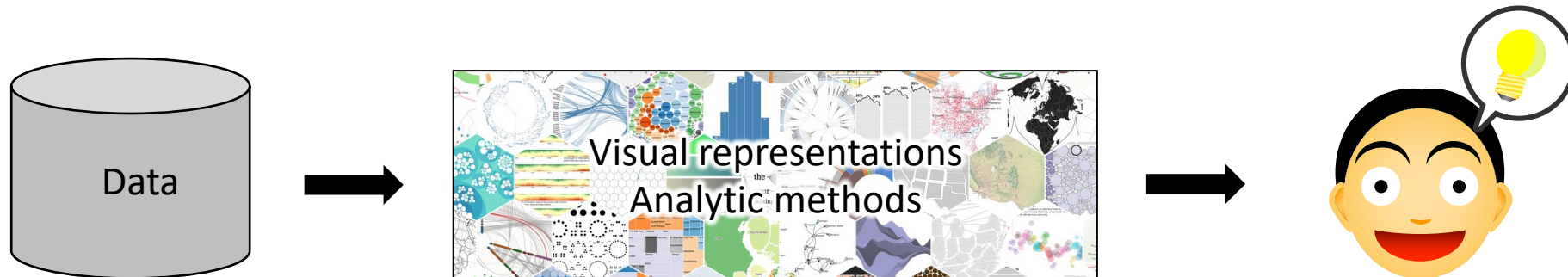
- W01 4/12 Guidance
- W02 4/13 JavaScript Programming
- W03 4/19 Data Visualization
- W04 4/20 Reading Data
- W05 4/26 Marks and Channels
- W06 4/27 Creating Data Plot - Scatter plot
- W07 5/10 Visualization Idioms
- W08 5/11 Creating Data Plot - Bar/Pie/Line/Area chars

# Schedule

- W09 5/17 Interactions
- W10 5/18 Implementing Interactions
- W11 5/24 Color and Aggregation
- W12 5/25 Implementing Multiple Views
- W13 5/31 Working on your project
- W14 6/01 Working on your project
- W15 6/07 Final Task : Project Presentation

# Project Presentation

- **Research Project**
  - Explain the data with efficient visual representation
    - Structured in a manner similar to a research paper
    - Group/Individual
    - Presentation/Report





# Grading and Requisites

- **Grading**

- Based on results of each exercise and one final report.

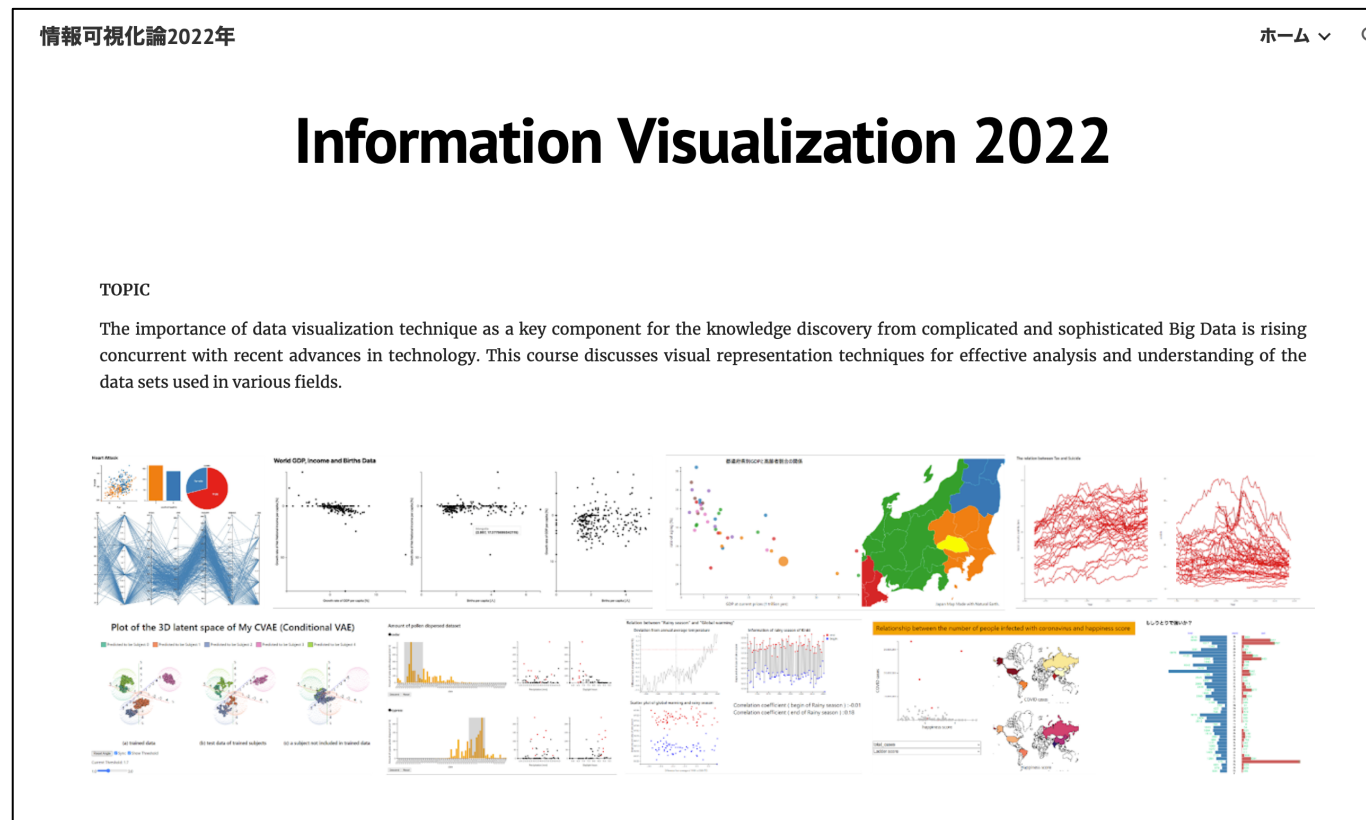
- **Requisites**

- Programming experiences in HTML, CSS, and JavaScript
    - It is possible to attend this course without these experiences
    - It is necessary to make an effort to learn a new programming language
  - GitHub account for your assignments and project

# Website

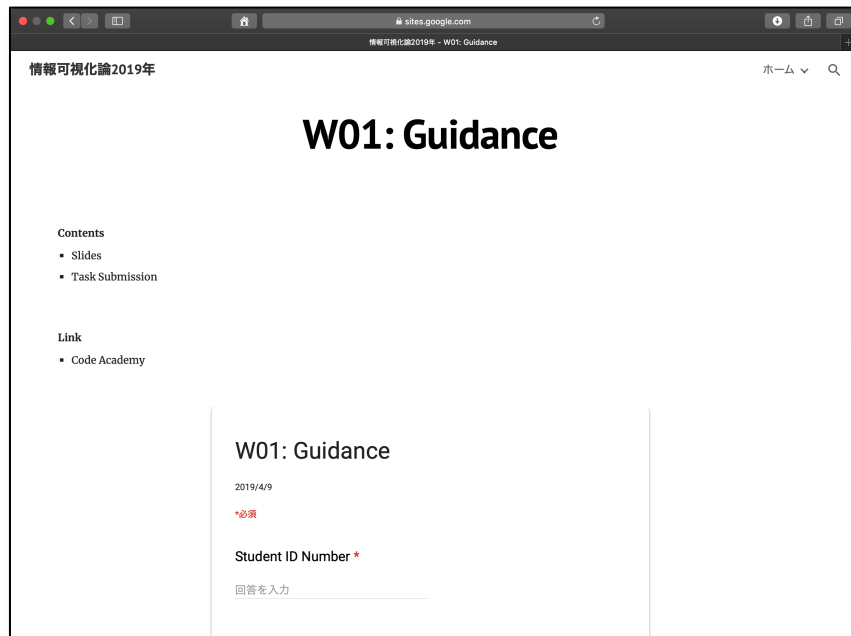
## • Information Visualization 2022

<https://sites.google.com/view/kobeinfovis2022>



# Polling

- Take the poll
  - Attendance confirmation
  - Assignment submission



What do you want from this class?

回答を入力

**送信**

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Click

Google フォーム このコンテンツは Google が作成または承認したものではありません

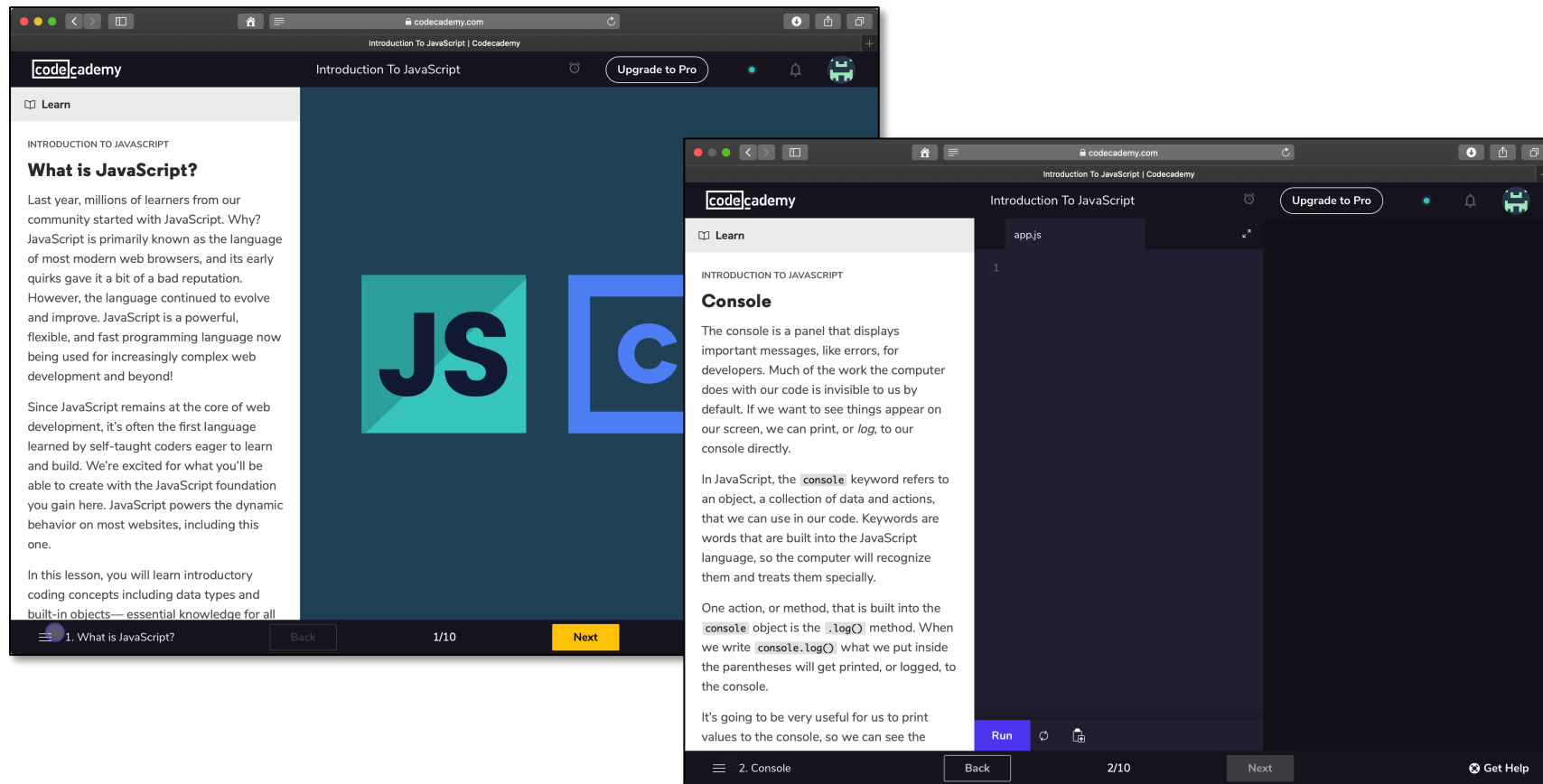
# JavaScript

- A high level, dynamic, untyped and interpreted programming language
- Standardized in ECMAScript language specification

```
<html>
  <head>
    <title>Sample</title>
  </head>
  <body>
    <script>
      document.write("Hello World!");
    </script>
  </body>
</html>
```

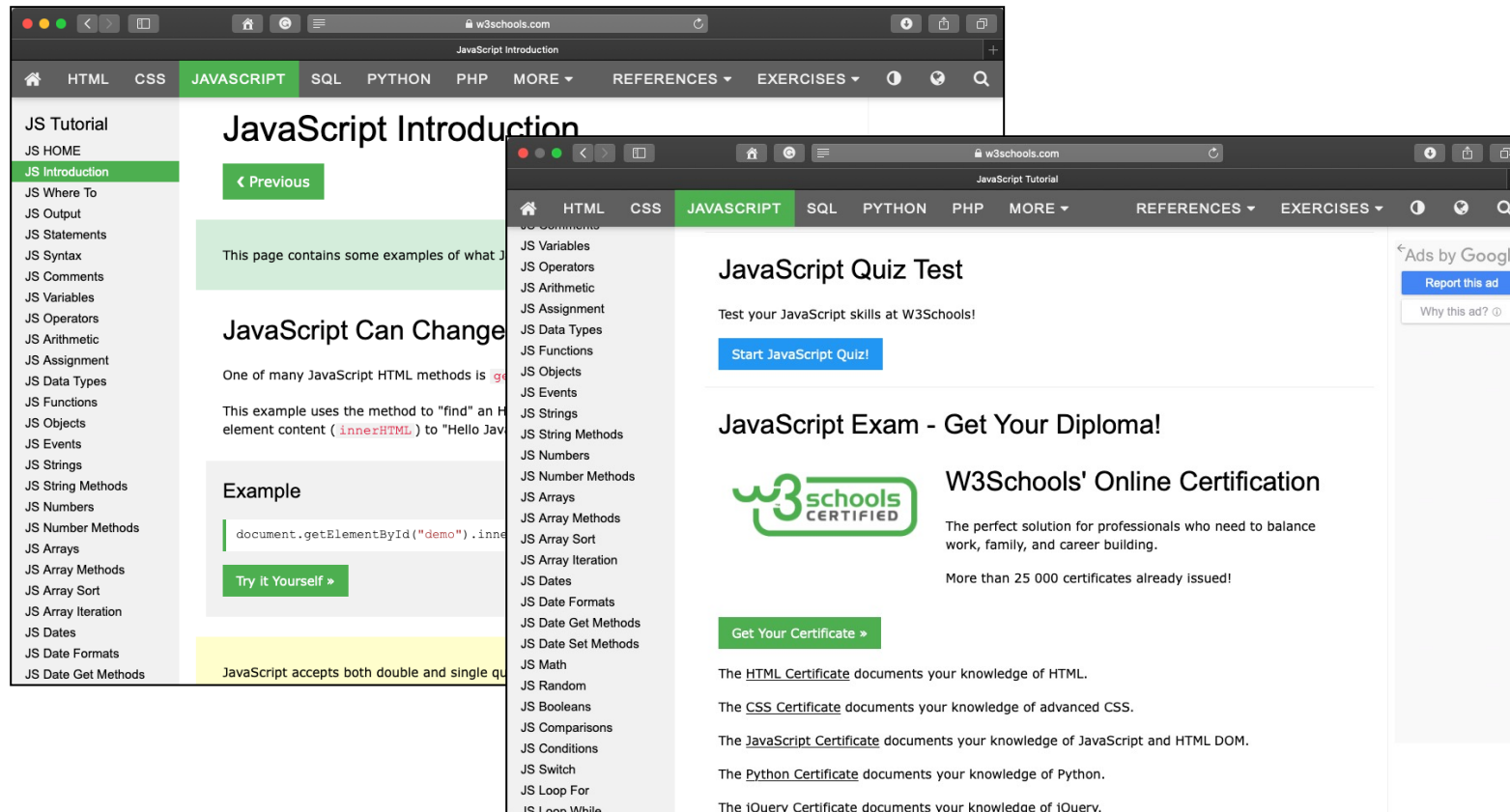
# Code Academy

- [www.codecademy.com](https://www.codecademy.com)



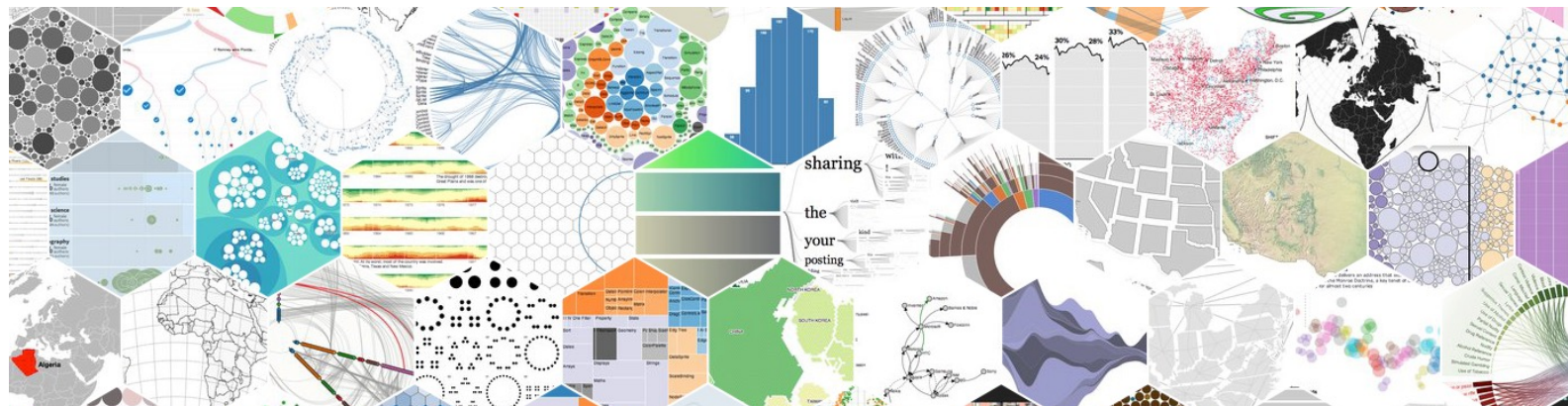
# W3Schools – JS Tutorial

- <https://www.w3schools.com/js/default.asp>



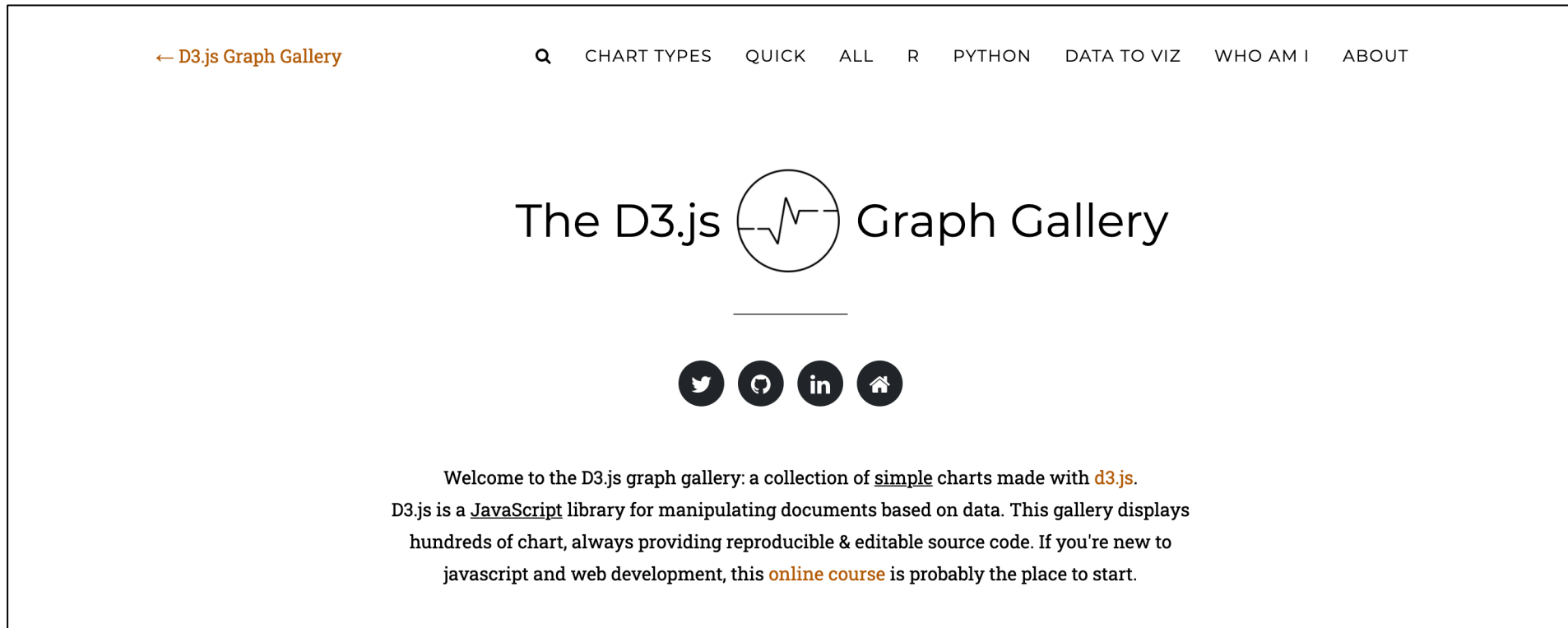
# D3.js

- **D3: Data-Driven Documents** <https://d3js.org>
  - A JavaScript library for manipulating documents based on data. D3 helps you bring data to life using HTML, SVG, and CSS. D3's emphasis on web standards gives you the full capabilities of modern browsers without tying yourself to a proprietary framework, combining powerful visualization components and a data-driven approach to DOM manipulation.



# The D3.js Graph Gallery

- <https://www.d3-graph-gallery.com/index.html>

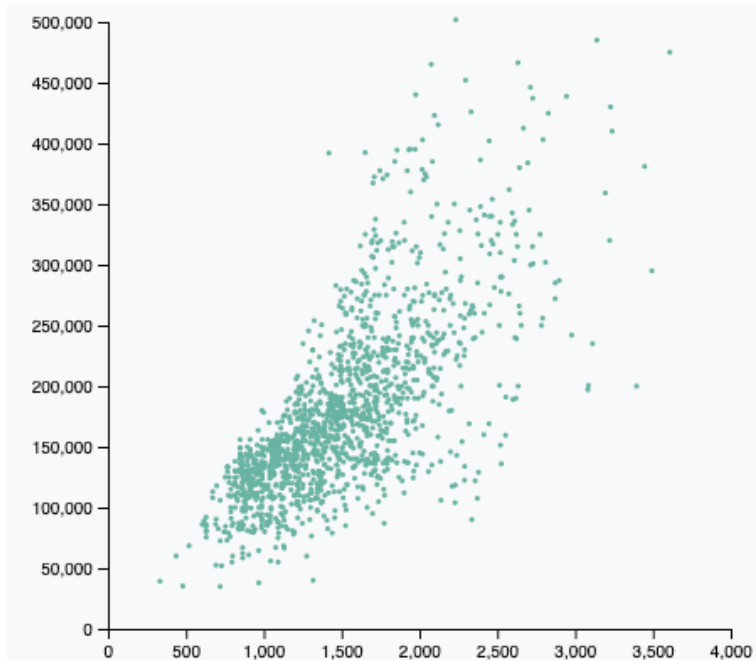




# Example: Scatterplot

- **Basic scatterplot in d3.js**

- Open: [https://www.d3-graph-gallery.com/graph/scatter\\_basic.html](https://www.d3-graph-gallery.com/graph/scatter_basic.html)
- Click: "DOWNLOAD CODE"



```
<!DOCTYPE html>
<meta charset="utf-8">

<!-- Load d3.js -->
<script src="https://d3js.org/d3.v4.js"></script>

<!-- Create a div where the graph will take place -->
<div id="my_dataviz"></div>
```

← Edit me!

```
<script>

// set the dimensions and margins of the graph
var margin = {top: 10, right: 30, bottom: 30, left: 60},
    width = 460 - margin.left - margin.right,
    height = 400 - margin.top - margin.bottom;
```

# Polling

- **Take the poll**

- Student ID Number
- Name
- What programming languages do you have experience with?
- What do you want from this course?