

CMSC 320

INTRODUCTION TO DATA SCIENCE



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1 Notes & Preface

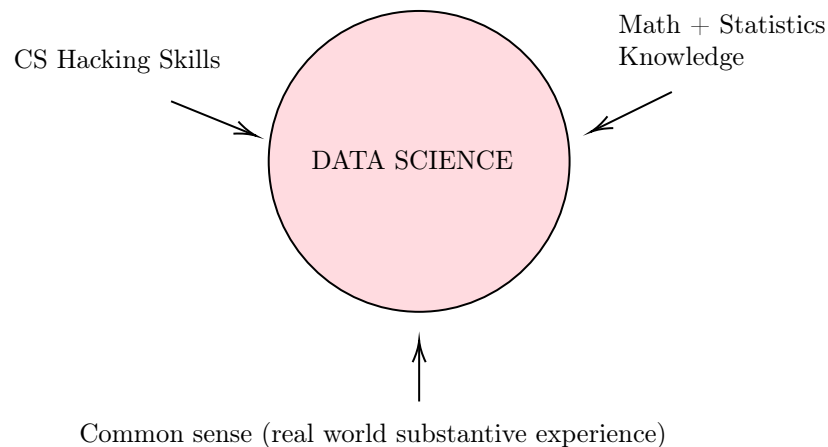
Course notes for CMSC320, under Prof. John Dickerson. Notes collected from previous and current lectures.

2 Lecture 1

What is Data Science?

Data Science is the application of computation and statistical techniques to address or gain insight. It's the intersection of statistics and Computer Science. Based on what I've learned thus far, learning to do data science is like learning how to use a TI-84 in statistics class. You're simply learning how to leverage programming tools in order to perform advanced, complex, and meaningful data-related operations.

It's the use of statistics and computer science in order to find real-world insights.



Topics

Here are the general topics that this class will cover.

- Processing data
- Visualizing data
- Understanding data
- Communicating data
- Extracting value from data

Tools

Here are some tools commonly employed by data scientists. We'll try to cover how to use most of them here.

- Python
- Scikit-Learn
- Docker
- PANDAS
- Spark
- TensorFlow

Conda

Conda is a package and environment manager for python that we can use with the command line. We can create multiple environments for us and install separate packages in each of them. This will be highly useful to us, as we sometimes want to consolidate the tools we use into separate environments.

3 Test Section

Lower Level

Here's a cool code example.

```
1 #include <stdio.h>
2 #include <math.h>
3
4 int main() {
5     double value;
6
7     printf("Enter a number: ");
8     scanf("%lf", &value);    /* Notice the use of %lf */
9
10    printf("sqrt %f: \n", sqrt(value));
11    printf("power of 2: %f\n", pow(value, 2));
12    printf("sin: %f\n", sin(value));
13
14    return 0;
15 }
```

Here's some more information about our code example.

4 Footnotes

Taken by Akilesh Praveen.