MAS DSE 260: Capstone Project

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Lecture 3: Exploratory Data Analysis

Today’s Topics

1. Reviewing where we are
2. STEP III: Exploring Data
3. Report III Format : DUE 2/18/22 9am

General Feedback

Report 2

- Data tables incomplete
- More focus on success metrics around data transfer, querying, updates, etc.
- Action-oriented steps
- When do I know when to iterate?
- A few teams focused on well-defined pipelines, the more the better
- Github links not accessible

Presentation 1

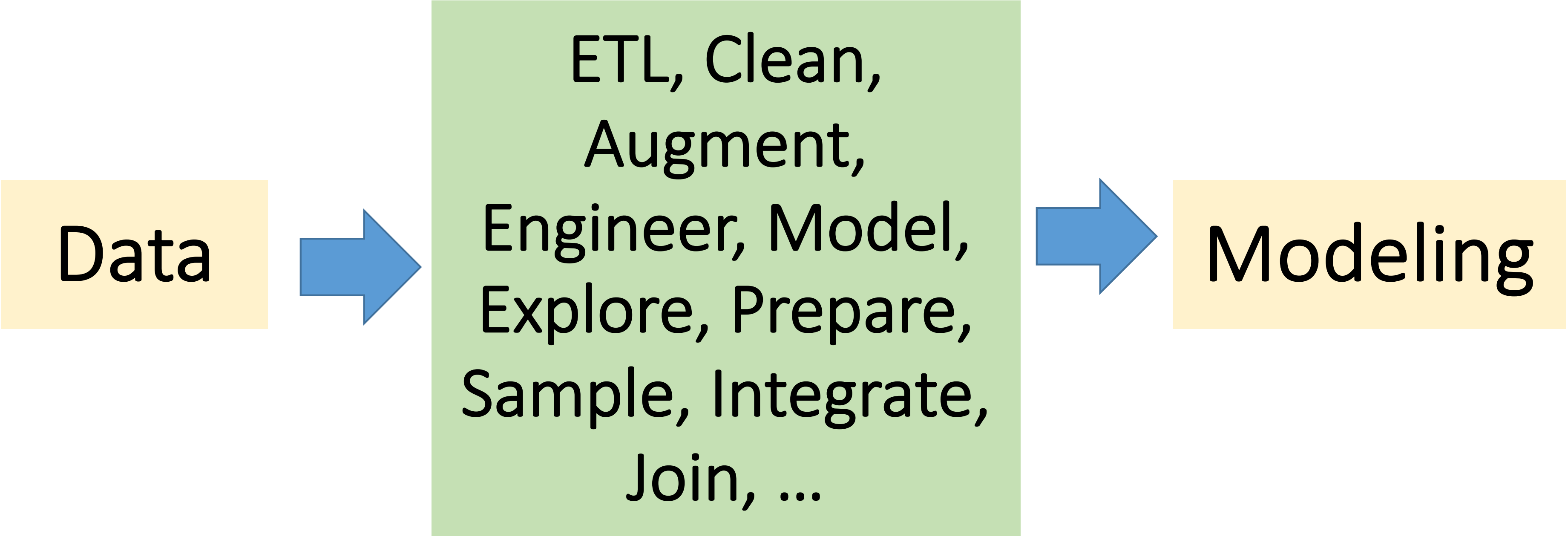
- Remember your imaginary audience
- Switch value proposition with problem statement
- Explain the challenge clearly (why-what?)
- Introduce your team/roles and advisor!! ☺
- Slide titles should tell your story
- Less text
- Graphics should be clear and referenced if not original
- Ending on your wins so far, e.g., early EDA results
- Practice the timing and delivery before the presentation

Process Roadmap (260 A)

- ✓ Step 1: Understanding the Challenge
  - ✓ REPORT 1
- ✓ Step 2: Designing the Data Acquisition and Preparation Pipelines
  - ✓ REPORT 2
- Step 3: Exploring Data
  - ✓ PRESENTATION 1: 2/5
  - REPORT 3: due 2/18
- Step 4: Defining Your Hypothesis and Minimum Viable Modeling Product
  - REPORT 4: due 3/4
- Step 5: Creating a Solution Architecture for Modeling and Optimization
  - PRESENTATION 2: 3/5
  - FINAL WINTER REPORT: due 3/13

Exploratory Data Analysis (EDA) and Pre-Processing

Data Pipelines for EDA



Data

ETL, Clean, Augment, Engineer, Model, Explore, Prepare, Sample, Integrate, Join, …

Modeling

EDA Objectives

- Produce a clear hypotheses related to the question
- Eliminate/add/clean/augment data
- Evaluate statistical inference of observed trends
- Assess and plan data management and modeling techniques, tools and infrastructure
- Create a baseline and strategy for iterations
- Collect metrics for feasibility and scalability requirements in the long term

How do you present EDA progress and results?

- REPORT YOUR INTERPRETATION AND HYPOTHESIS
  - Anything of statistical significance
  - You are trying to understand the data and fix it when needed
  - Most of the activity is not reportable

- FOCUS ON REPRODUCIBILITY
  - Repeatable actions
  - Code versioning and repositories

- EXPLAIN HOW IT INFLUENCED DATA MODELING AND ENGINEERING

NEXT: Think towards your MVP!

Step III Report Guidelines

- Title, team members and advisor(s)
- Sections:
  - Key Findings through EDA (Different for each project)
  - Data Exploration, Cleaning, Wrangling and Engineering
    - Data Exploration Summary
    - Data Preprocessing
    - Storing processed and/or integrated data
      - Processed dataset description for each processed dataset including why you want to process it that way
      - Table for processed data sets including processed data set name, input datasets, link to the processing scripts and notebooks, and provisional data size
    - Feature Engineering and Data Modeling
      - Summary of feature sets
      - Table for feature set including links to input datasets, feature engineering scripts and notebooks, and provisional data size
    - Data Access Design
      - Design for data querying interfaces
      - Justification for manual vs. programmatic access
  - Bullets for each team member's individual contributions in Step 3
  - Any major updates to Steps 1 and 2 as a result of exploratory data analysis
- Keep it to 4-6 pages
- Due date: 2/18/2022 9am

Questions?

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