

## MAS627 Final Project Write-up

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### Laptop Analysis Dashboard

**Description:** The Laptop Analysis Dashboard is a Shiny app built to analyze and visualize data about various laptop models. It provides users with an interactive way to explore and understand the relationship between different laptop features like memory, CPU type, GPU type, screen size, and price. The app uses a dataset containing detailed information about laptop specifications, including RAM, storage, screen size, price, and more.

**Purpose and Motivation:** The primary purpose of building this app is to enable users, such as students, tech enthusiasts, or buyers, to make informed decisions when comparing laptop models. By offering a user-friendly interface, users can easily filter and view data based on specific criteria such as company, memory capacity, screen size, and more. This makes the app particularly valuable for those who are looking to purchase a new laptop or for businesses conducting market research in the tech industry.

#### Interesting Features:

- **Filter and Compare:** Users can filter laptops by company, memory capacity, and screen size (bucketed into ranges), allowing them to narrow down the data to their preferences.
- **Price by Model:** A bar chart that shows the average price of laptops by model type, giving insight into which models are priced higher or lower.
- **Price vs. Weight Analysis:** A scatter plot that compares laptop prices with their weights, colored by the operating system, helping users see the relationship between weight and price.
- **Operating System Analysis:** A chart that shows the average price of laptops grouped by their operating systems, useful for comparing the pricing of MacOS vs. Windows laptops.
- **RAM Comparison:** A dedicated tab that allows users to compare the distribution of RAM sizes across different companies and price ranges. Users can filter the data by company and price range, making it easier to focus on specific market segments.
- **GPU and CPU Analysis:** A tab with two plots that display how different CPU and GPU types correlate with laptop prices, allowing users to understand the impact of these components on pricing.

**User Interaction:**

- The app includes a side panel with conditional inputs that change based on the selected tab. For example, users can filter by company and price range when analyzing RAM distribution, while other tabs offer filters for screen size and memory capacity.
- The user interface is clean and intuitive, with tabs for each major analysis section, making it easy for users to switch between different aspects of laptop data.
- By interacting with the plots and input fields, users can dynamically update the visualizations to better understand trends in laptop pricing, features, and specifications.

**Relevance:** This app is particularly relevant for students, researchers, and tech enthusiasts who want to analyze laptop specifications without needing advanced data analysis skills. It can also be used by tech companies to understand market trends, or by potential buyers who want to make data-driven decisions when purchasing laptops. The ability to customize the data being viewed makes the app versatile and engaging for various use cases.