Final Project Proposal

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Project Idea:

For our final project, we plan to create a customer segmentation analysis on customer data provided by Kaggle. The customer data was collected from an automobile company and includes gender, marital status, age, graduation status, profession, work experience, spending score, and family size. The project aims to segment the customers into four groups based on these variables. These segments will provide the automobile company with valuable knowledge regarding their customers, which they would use for decision-making during things like marketing and overall strategy.

To create this project, we plan to write machine learning techniques in Python 3.8.8, specifically support vector machines and k-nearest neighbors. We will then compare these techniques to more basic ones like perceptron to test if the more nuanced methods yield higher quality insights regarding the automobile company’s customers.

To begin our research, we plan to read papers concerning customer segmentation in eco-friendly hotels, customer segmentation in private banking, and customer segmentation using support vector machines. This will help establish a baseline expectation for the project’s results that will allow for comparison once the investigation is complete. These articles help demonstrate the usefulness of the research and machine learning techniques employed by the project. The specific papers are found below in APA citation format, which will change once the project is complete.

Planned Project References:

Yadegaridehkordi, E., Nilashi, M., Nizam Bin Md Nasir, M. H., Momtazi, S., Samad, S., Supriyanto, E., & Ghabban, F. (2021). Customers segmentation in eco-friendly hotels using multi-criteria and machine learning techniques. *Technology in Society*, *65*. <https://doi.org/10.1016/j.techsoc.2021.101528>

Smeureanu, I., Ruxanda, G., & Badea, L. M. (2013). Customer segmentation in private banking sector using machine learning techniques. *Journal of Business Economics & Management*, *14*(5), 923–939. <https://doi.org/10.3846/16111699.2012.749807>

Rogić, S., & Kašćelan, L. (2021). Class Balancing in Customer Segments Classification Using Support Vector Machine Rule Extraction and Ensemble Learning. Computer Science & Information Systems, 18(3), 893–925.