**A Project to Make Business More Efficient and Automated**

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| **Motivation: A business can’t exist without its customers. The growing competition in any business field making businesses hard enough to sustain. So it’s a demand of time that we do business in a smarter way. That’s where this project leads on,**  **In any running business, we hope to target/predict customers using specific data set by machine learning and data mining**  **Objective: The goal of this project is to create a system using machine learning and data mining which will recommend the preference-based product to the customers in an e-commerce system**  **Critical Challenges: Working with business enthusiastic people will be the most critical challenge in this project while having a low knowledge about it.**  **Conflicting requirements: Making the user acknowledgment and agreement policy so that user get information about what data are being collected**    **Figure: Recommended Products for the user on an e-commerce site** |  |  |  |  |  |  |

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| |  | | --- | | **Knowledge Profile (K) [K –short name]** | | **K1–natural sciences** | | **K2 –mathematics** | | **K3 –engineering fundamentals** | | **K4 –specialist knowledge** | | **K5 –engineering design** | | **K6 –engineering practice** | | **K7 –comprehension** | | **K8 –research literature** | | |  |  | | --- | --- | | **Attribute** | **P1 and some or all of P2 to P7:** | | **Depth of knowledge required** | **P1: one or more of K2, K3, K4, K5, K6 and K8** | | **Range of conflicting requirements** | **P2: wide-ranging or conflicting technical, engineering and other issues** | | **Depth of analysis required** | **P3: no obvious solution** | | **Familiarity of issues** | **P4: Involve infrequently encountered issues** | | **Extent of applicable codes** | **P5: outside problems encompassed by standards and codes of practice** | | **Extent of stake-holder involvement and conflicting requirements** | **P6: diverse groups of stakeholders with widely varying needs** | | **Interdependence** | **P7: many component parts or sub-problems** | |

**Some components of Complex Engineering Problem:**

**Let’s explore how a few P’s could be addressed through this project**

**P1 (*Depth of knowledge required- one or more of K2, K3, K4, K5, K6 and K8*): This project needs the study of related works having the same goal like our project (K8- *research literature*), designing the project with hardware components (K3- *engineering fundamentals*, K5- *engineering design*), decide which CSE and Business Fundamentals to use among various choices to ensure sustainability (K4- *specialist knowledge*), Developing an App for the project (K6- *engineering practice*).**

**P4 (*Familiarity of issues- Involve infrequently encountered issues*): This project solves a business problem which is deeply associated with Computer Science and Engineering faculty. In the undergrad level we haven’t acquire proper knowledge about machine learning and data mining.**

**P6 (*Extent of stake-holder involvement and conflicting requirements- diverse groups of stakeholders with widely varying needs*): Diverse group of stakeholders (usually all the users who takes part in online shopping/e-commerce website) will be benefited by this project along with all the business owners, entrepreneurs.**

**P7 (*Interdependence- many component parts or sub-problems*): Project involves two subsystems mainly:**

**1. Application model**

**2. Data analysis on the inputs (real time data) of this project**

**List of activities (As)**

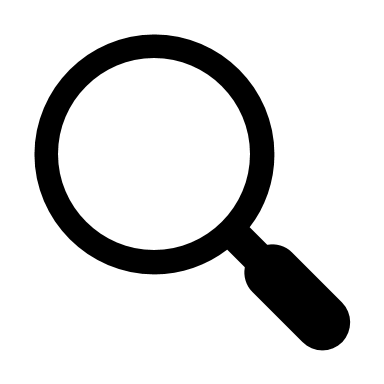
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| **Attribute** | **Some or all of the following:** |
| **Range of resources** | **A1: use of diverse resources (include users, money, equipment, materials, information and technologies)** |
| **Level of interaction** | **A2: resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues** |
| **Innovation** | **A3: creative use of engineering principles and research-based knowledge in novel ways** |
| **Consequences for society and the environment** | **A4: consequences in a range of contexts, characterized by difficulty of prediction and mitigation** |
| **Familiarity** | **A5: Can extend beyond previous experiences by applying principles-based approaches** |

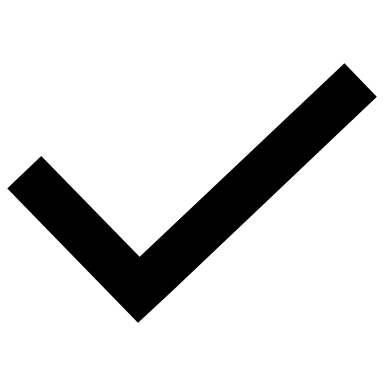
**Let’s explore how a few A’s could be addressed through this project**

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| **Attribute** | **Some or all of the following** |
| **Range of resources** | **A1 (*Range of resources*): Project needs to engage diverse resources including users, money, information and technology.** |
| **Level of interaction** | **A2 (*Level of interaction*): A good level of interaction is needed among the users and the e-commerce website with the system** |
| **Innovation** | **A3: creative use of engineering principles and research-based knowledge in novel ways to ensure security over user data** |
| **Familiarity** | **A5 (*Familiarity*): Solving a business related problem will be a new challenge for a CSE students.** |

**System Diagram:**

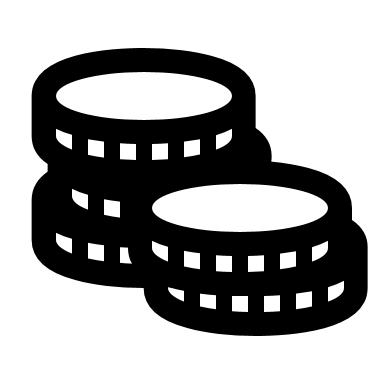
recommends

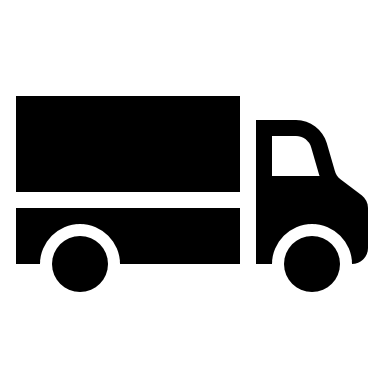
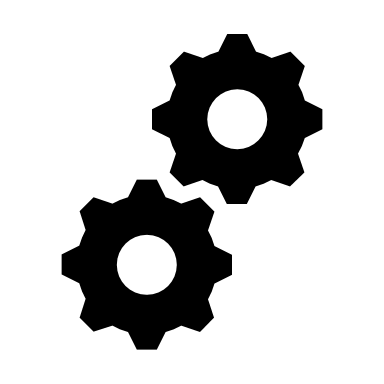
 User Inventory

 Recommendation

System

Choose Product





Pay Bill

Storing Activity