**Project Proposal**

**BSc Project Proposal Form: Guidelines**

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| **Student Name** | J.L.M Wenuja | |
| **Student Number** | 2425012 | |
| **Course** | BSc (Hons) Computer Science | |
| **Supervisor Name** |  | |
| **Course Coordinator Name** | Dr. Enjie Liu | |
| **Title of Project** | “SkinPro” | |
| **Abstract of the project** | This project focuses on creating a mobile app that predicts house prices using a machine learning regression model. By analyzing key features like the number of bedrooms, living area, and renovation status, the model provides accurate price predictions. The app offers a simple interface for users to input property details and receive instant price estimates, aiding potential buyers and real estate agents in decision-making. This project combines machine learning and mobile app development to deliver a practical real estate tool. | |
| **Project deliverables** | **Software / Hardware deliverables**   * Mobile Application: A fully functional mobile application that allows users to input house-related features and receive predictions for house prices. The mobile app will provide a user-friendly interface, real-time predictions, and necessary validations. * Machine Learning Model: A trained regression model capable of predicting house prices based on given attributes such as bedrooms, living area, renovation status, and more. * Saved Artifacts: The machine learning model and scaler saved as .pkl files using the Joblib library to allow reusability and integration into different applications.   **Document deliverables**   * Documentation: Complete documentation detailing code explanations, project architecture, model training processes, and deployment steps. * Project Report: A detailed report outlining the objectives, methodologies, and outcomes of the project, along with visualizations of the results and model evaluations. | |
| **Description of your artefact** | * The artefact will be a mobile app based prediction system for house prices using a regression-based machine learning model. * Users will be able to input features of a house, such as the number of bedrooms, square footage, year of construction, renovation status, and several others. * The system will predict the price of the house based on these inputs using a trained regression model. * The core idea is to provide a tool that leverages historical housing data to help potential buyers, sellers, or real estate agents make informed decisions. | |
| **What methodology (structured process) will you be following to realise your artefact?** | **Data Collection and Preprocessing:**   * Collect Data: Historical house pricing data will be sourced from publicly available datasets. * Preprocess Data: Cleaning and preprocessing of the dataset to handle missing values, encoding categorical features, and normalization of numerical data.   **Exploratory Data Analysis (EDA):**   * Feature Analysis: Analyze and visualize the distribution of key features and their correlations with house prices. * Outlier Detection: Identify and handle outliers that may affect model training.   **Model Training and Evaluation:**   * Feature Engineering: Transform the dataset to create new meaningful features for the model. * Model Selection: Train multiple regression models and select the best-performing model based on evaluation metrics such as mean squared error (MSE). * Model Tuning: Perform hyperparameter tuning using techniques such as GridSearchCV to optimize model performance.   **Mobile Development:**   * Frontend Development: Build a responsive user interface for the mobile application. * Backend Development: Implement the prediction logic using Flask, integrating the trained model and handling user inputs. * Deployment: Deploy the mobile application on a playstore and ios store ensuring scalability and accessibility.   **Testing and Deployment:**   * Integration Testing: Ensure that the entire pipeline (user input, model prediction, display of results) works seamlessly. * Model and Application Deployment: Deploy the model as a web-based application, ensuring that the user experience is intuitive and efficient. | |
| **How does your project relate to your degree course and build upon the units/knowledge you have studied/acquired** | * Machine Learning and Predictive Modeling: The project applies machine learning concepts like regression modeling and hyperparameter tuning. * Data Analysis and Visualization: Exploratory data analysis using visualization techniques is essential to understanding relationships within the dataset. * Software Engineering Principles: The structured methodology and software development aspects align with core software engineering principles covered in the degree course. * Mobile Development: Developing and deploying the mobile application involves integrating knowledge of mobile frameworks and front-end technologies building on course material in mobile development and deployment. | |
| **Resources** | Hardware and Software:   * Personal computer with sufficient processing power. * Access to Google Colab or Jupyter Notebook for model training and evaluation. * Development environment with Python, Flask, and essential libraries.   Data Sources:   * Historical house price datasets sourced from public repositories   Deployment Platform:   * Google paly store and ios store for hosting the mobile application.   Literature and Documentation:   * Online tutorials, research articles, and course materials related to machine learning, web development, and data science. | |
| **Have you completed & submitted your ethics form?** | YES |  | |
| **If the project is a development of previous work by yourself or others, give details below. Failing to declare such previous work here may be treated as an academic offence** | | |

**Supervisor Signature:**

**Student-supervisor meeting schedule:**

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| --- | --- | --- | --- |
| **Supervisor’s name** | **Student’s name** | **Meeting on the day of the week** | **Meeting at the time of the day** |
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**Course Coordinator Signature**

**After the proposal has been signed off by both the supervisor and course coordinator scan the proposal and upload on BREO with signatures. Projects that follow proposals that have not been approved may be cancelled and there will be no compensation for any time lost.**

**Part 2 – List of relevant resources**

*Fill in this section after your project proposal has been approved by your supervisor. Use Harvard referencing (see* [*https://lrweb.beds.ac.uk/a-guide-to-referencing*](https://lrweb.beds.ac.uk/a-guide-to-referencing) *). Modify the list below as appropriate. This list is part of Assignment 1 and will be submitted with the Project Proposal.*

* *Books*
* *…*
* *…*
* *Journal Papers*
* *…*
* *…*
* *Web Sites with relevant information*
* *…*
* *…*
* *Relevant software*
* *…*
* *…*
* *Relevant hardware*
* *…*
* *…*
* *Other*
* *…*
* *…*