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**Assessment Cover Page**

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| *Module Title* | Strategic Thinking |
| *Assessment Title* | CA 1 – Capstone Project Proposal |
| *Assessment Due Date* | 27/10/2024 |
| *Date of Submission* |  |

**Declaration**

By submitting this assessment, I confirm that I have read the CCT policy on academic misconduct and understand the implications of submitting work that is not my own or does not appropriately reference material taken from a third party or other source.

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I further confirm that this work has not previously been submitted for assessment by myself or someone else in CCT College Dublin or any other higher education institution.

**Assessment Task: Capstone Project Proposal**

**Title:** *Predicting Housing Prices Using Machine Learning*

Introduction

The housing market plays an essential role in economic stability and development. Housing prices directly influence household wealth, investment decisions, and urban planning. Fluctuations in housing prices affect not only individual homeowners but also investors and governments, making the prediction of housing prices a critical task for many sectors. Predicting housing prices with accuracy can help stakeholders make informed decisions about investments, development, and economic policies. Traditional statistical methods have long been used to forecast housing prices, but these techniques often fall short when it comes to capturing the complex and dynamic nature of the housing market. However, advances in machine learning offer new opportunities to improve the accuracy and reliability of prediction models by analyzing large datasets and identifying patterns in housing prices more efficiently than traditional methods (Case and Quigley, 1991).

The increased availability of housing data allows machine learning techniques to provide a reliable solution for forecasting housing prices based on various features such as property size, location, nearby amenities, and infrastructure. This project aims to develop a machine learning model capable of accurately predicting housing prices by analyzing data from European Union sources, focusing on the factors that drive price fluctuations. The outcomes will have practical applications for real estate companies, investors, urban planners, and policymakers who need data-driven insights for decision-making in the ever-changing housing market.

# Objectives

The primary objective of this project is to develop a machine learning-based prediction model that can accurately predict housing prices based on key factors. This will involve the design and implementation of various machine learning algorithms, such as regression models, decision trees, and random forests. A significant part of the project will focus on evaluating the performance of these algorithms to determine which is most suitable for predicting housing prices. Additionally, the project will explore real-world applications, providing a tool that helps real estate companies, investors, and urban planners make informed decisions on property investments by forecasting future price trends.

Another key objective is to create an interactive visualization tool that offers real-time insights into housing price predictions and market trends. This dashboard will provide stakeholders with user-friendly access to the model’s predictions, making it easier to interpret the results and apply them to their decision-making processes. Finally, the model will be designed with scalability in mind, ensuring that it can handle large datasets and be adapted for use in different regions within Europe. This adaptability will broaden the model’s applicability and allow it to serve a wider audience.