Project Summary: Automated Property Valuation System

The goal of this project was to create a efficient, interpretable, reliable system for estimating a property's official assessed value.

- **Business Objective:** I developed an Automated Valuation Model to predict the fair market value of residential properties. This tailored model will help governments and analysts quickly identify under/over valued properties / Winnipeg market trend, supporting fairer, more consistent market value and taxation amount.
- **Data-Driven Approach:** We analyzed a wide range of property features like living area, number of rooms, and special amenities (pools, AC, garage) along with location information. This helped us understand exactly which characteristics most strongly influence a property's assessed value.
- **Building the Core System:** We used Machine Learning and tree-based decision models to learn complex patterns from historical assessment data. This model can be deployed to validate and analyze property assessment process. It will help to predict baseline property value based on features, helping support fair and consistent assessments via interpretable AI.
- **Model Selection:** We tested several advanced statistical methods, with a focus on powerful and interpretable tree-based models. The best-performing model was selected for its superior ability to accurately predict values and handle the complex factors of the real estate market.
- **Key Outcome:** The final model allows for faster, more objective, and data / evidence-based property assessments. This reduces the need for constant manual decision making and creates a transparent, consistent foundation for property value, tax and municipal planning decisions across the entire jurisdiction.