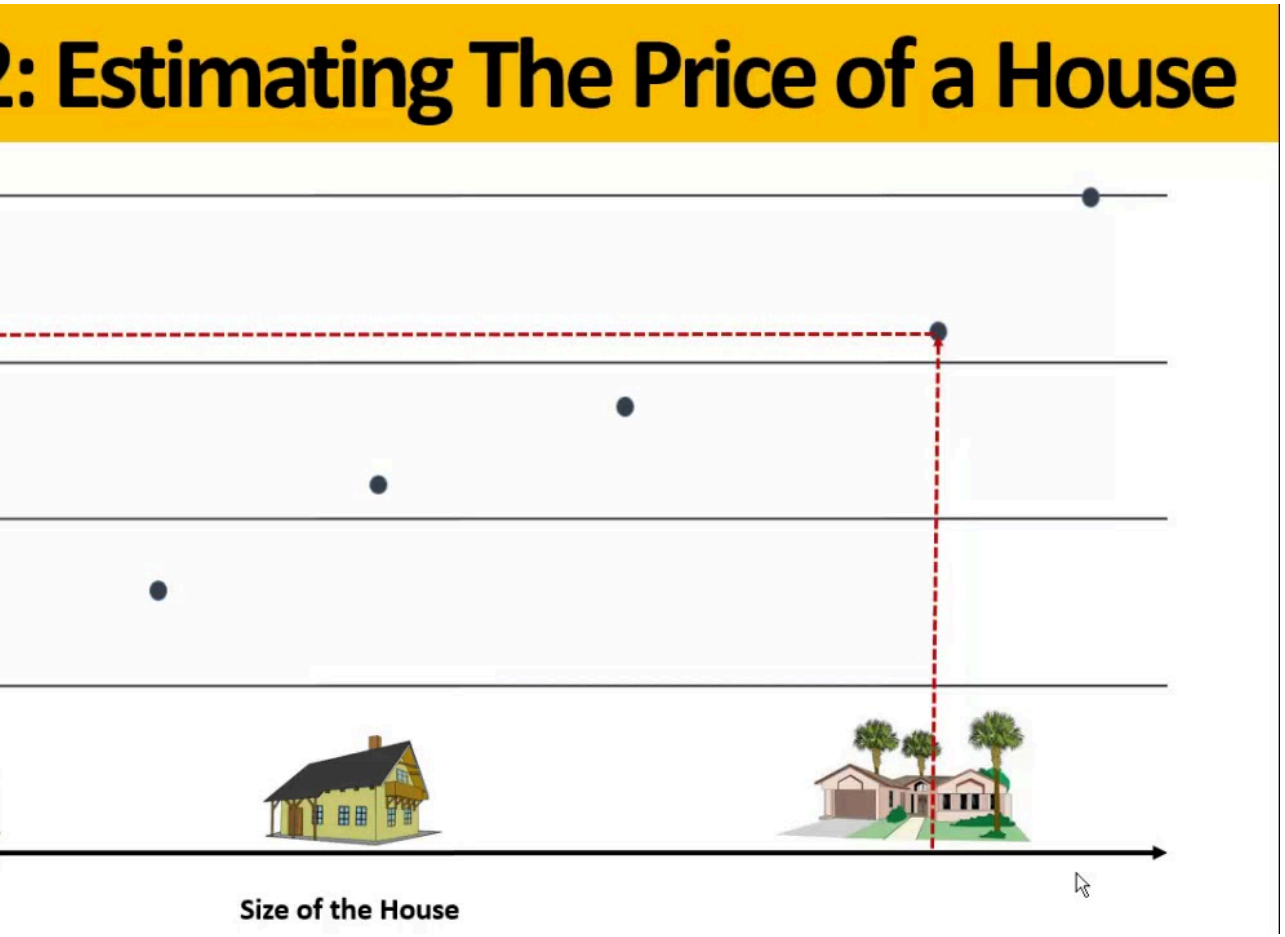



# Predicting House Prices with Linear Regression

Explore how to use Linear Regression to predict house prices based on factors like area, number of bedrooms, and location.

# Introduction

### Predicting House Prices

Use Linear Regression to predict house prices based on factors like area, number of bedrooms, and location

### Leveraging Data

Gather relevant data on house prices, area, number of bedrooms, and location

### Data Preprocessing

Clean and prepare the data for model training, including handling missing values and normalizing features

**By exploring the use of Linear Regression, we can leverage data on house attributes to accurately predict house prices and support decision-making in the real estate market.**

# Data Collection

## Data Sources

Identify reliable sources of data on house prices, area, number of bedrooms, and location. This could include real estate databases, government datasets, or online real estate platforms.

## Data Collection Techniques

Determine the appropriate data collection techniques, such as web scraping, API integration, or manual data entry, to gather the necessary information for your analysis.

## Data Quality Assurance

Implement measures to ensure the data you collect is accurate, complete, and up-to-date. This may involve checking for missing values, outliers, and inconsistencies in the data.

## Data Organization

Organize the collected data into a structured format, such as a spreadsheet or a database, to facilitate easy access and analysis.

# Data Preprocessing

## Handle Missing Values

Identify and address any missing values in the dataset using techniques like imputation or data removal.

## Feature Normalization

Normalize the feature values to a common scale, such as using standardization or min-max scaling, to ensure no feature dominates the model training.

## Categorical Feature Encoding

Convert any categorical features (e.g., location) into a numerical representation that the model can understand, such as using one-hot encoding.

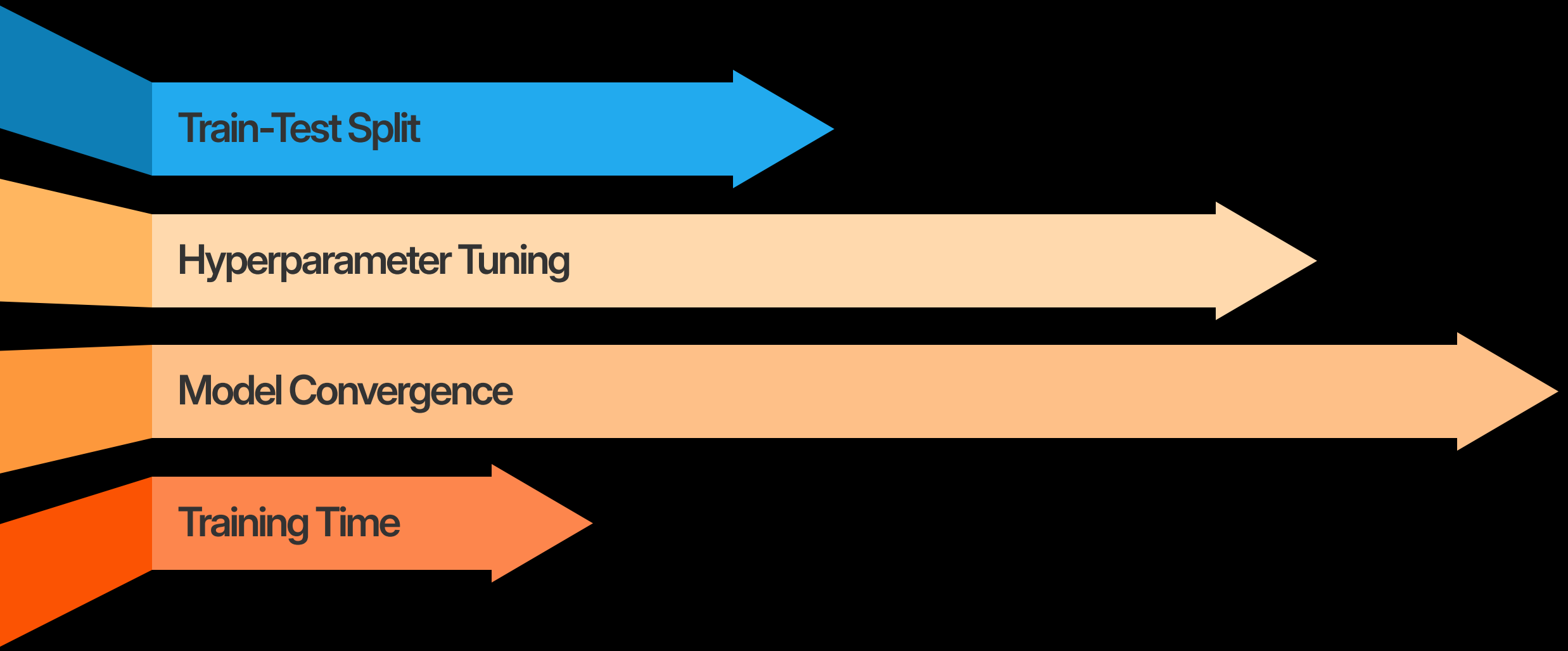
## Data Splitting

Divide the dataset into training and testing sets to evaluate the model's performance on unseen data.

## Feature Engineering

Create new features or transform existing ones to improve the model's ability to capture the underlying relationships in the data.

# Model Training



# Model Evaluation

Assess the accuracy and performance of the Linear Regression model using the following metrics:

| 1% | 0% | 0% | 1% |
| --- | --- | --- | --- |
| R-squared | Mean Absolute Error | Root Mean Squared Error | Cross-Validation Score |

# Model Deployment


Load the previously trained Linear Regression model into the application or deployment environment.

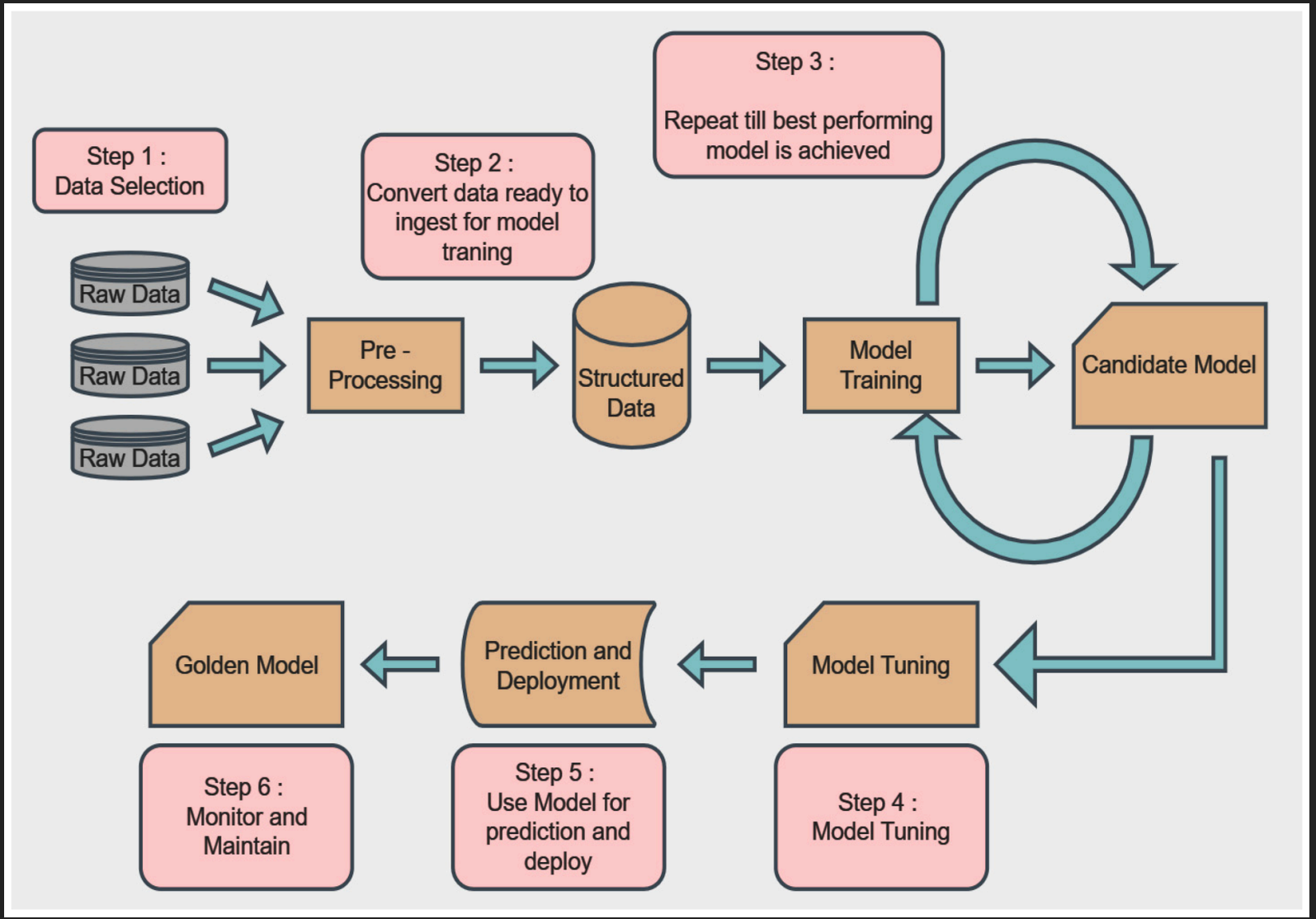
Collect the necessary data points for the new house, such as area, number of bedrooms, and location.

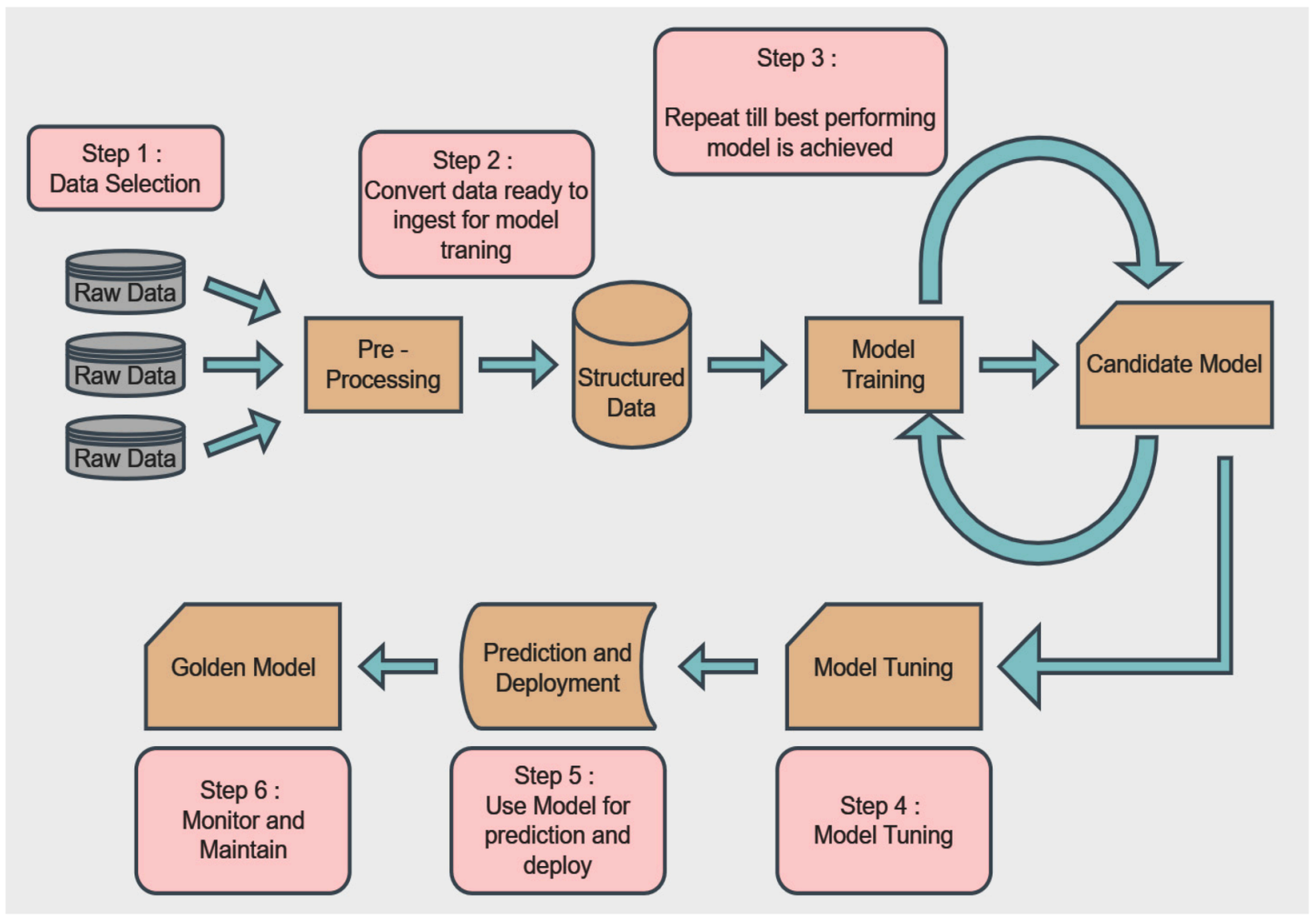
Use the loaded model to make predictions on the new house data and generate the estimated house price.

Present the predicted house price to the user or integrate the predictions into the application's output.

# Real-World Application

The Linear Regression model can be invaluable for real estate professionals, homebuyers, and policymakers. By applying this model to factors like property size, number of bedrooms, and location, they can generate accurate price predictions to inform buying, selling, and investment decisions. This data-driven approach can help identify undervalued properties, guide pricing strategies, and support policy decisions aimed at improving housing affordability.






The Linear Regression model has demonstrated its power in predicting house prices by leveraging factors like area, number of bedrooms, and location. By implementing the steps outlined in this presentation, we can train, evaluate, and deploy the model to generate accurate predictions, ultimately supporting real-world decision-making in the housing market.