

**MASTER'S PROJECT (FALL 2017)****TOPIC:** *House Price Prediction Using a Linear Hedonic Price Regression Model***PRESENTOR:** Kuan-Lun Chen**ADVISOR:** Dr. Haiping Xu**DATE & TIME:** Thursday, December 7, 2017**LOCATION:** Dion 302E (Demo)**COMMITTEE MEMBERS:** Dr. Hua (Julia) Fang and Dr. Xiaoqin (Shelley) Zhang**ABSTRACT**

A critical task for a house buyer or a house seller is to correctly estimate the values of houses in the housing market. Although there are many sources of estimated prices at local housing agencies and online real estate database companies such as Zillow and Redfin, their house prediction models are typically invisible, and the predictions are usually not reliable. In order to achieve reliable estimation of house prices and also provide a visible model, in this project, we developed a useful Graphic User Interface (GUI) to help users predict a house's price using a linear hedonic price regression model with predefined house features. The project has been developed using the Model-View-Controller (MVC) architecture, where its hedonic price model suggests that the property of a house can be broken down into several composite attributes, and consumer's purchasing decision can be made based on per unit cost of each attribute. To estimate the values of different attributes, we adopt the linear regression analysis to produce the price model. The linear least squares fitting technique is used in our analysis, which has an efficient solution using Singular-Value Decomposition (SVD). We collected house features of nearby houses as inputs and the recent sold prices as outputs to build the price model, which can be used to predict a target house's price. To demonstrate the high performance of our approach, we selected a number of towns in Massachusetts, and calculated their hit rates in different error percentage ranges. The experimental results show that our approach outperforms the naïve house prediction approach using average price-per-square-foot of houses in a house's surrounding area.