

**MASTER'S PROJECT (SUMMER 2015)****TOPIC:** *Predicting Local House Prices Using an Incremental-Learning Neural Network***PRESENTOR:** Amol S. Gade**ADVISOR:** Dr. Haiping Xu**DATE & TIME:** Friday, August 28, 2015, 11:00 AM**LOCATION:** Dion 311**COMMITTEE MEMBERS:** Dr. Shelley Zhang and Dr. Firas Khatib**ABSTRACT**

Accurate predictions of local house prices are very important to prospective homeowners, developers, investors, appraisers, tax assessors and other real estate market participants, such as mortgage lenders and insurers. It is an insistent demand by the current real estate industry to develop a logical scientific prediction model that is not only easy-to-use, but also reliable and accurate. However, the real estate prices are typically a chronological sequence with unknown statistical relationships influenced by many factors, which make it very difficult to predict house prices using predefined functions. In this project, we adopted a neural network approach to reflect the time variability of the local house prices. We set up an incremental-learning neural network, and defined a number of selected features as its inputs, including square footage, lot area, parking spaces, number of beds, number of baths, and age of the house. The neural network was first initialized with the data points of recently sold houses. Once initialized, it can be trained incrementally with new training data points in order to adapt to the market trend in real time. Given the values of the selected features of a local house, the neural network was able to classify and output the predicted market value of that house. We collected data points from major real estate companies with recently sold houses, and demonstrated that the incremental-learning neural network approach could result in more accurate predicted house prices than the naive price-per-square-foot approach. Furthermore, the experimental results also showed that our approach outperformed leading real estate companies such as Zillow.com for local house price prediction.