**“Real Estate listing website” Literature Survey**

Report 01:

Real Estate Price Range Prediction Using Artificial Neural Network And Grey Wolf Optimizer

In this paper he propose a Deep learning scheme for predicting the housing market prices by using an artificial neural network and a grey wolf optimizer algorithm.

He train hybrid ANN-GWO algorithm to analyze the data through a generalized linear regression and predict the market prices , the mean square error (MSE) is the standard evaluation metric

In this work we present an artificial neural network ANN approach to evaluate the members of the grey wolf pack (GWO algorithm) in order to get the best accuracy of the ANN-GWO house price prediction

ANN are biologically inspired algorithm that aim to simulate the functionality of the human brain in an artificial neural network, The neural network structure is divided into three basic layers: input, output and hidden.

An input layer which receives the data from the surrounding

An output layer consists of neurons that present the processed information

A hidden layer that is not directly connected to the environment, that is, it does not connect directly to sensing organs or effectors.

He combine the functionality of both ANN and GWO in one prediction scheme, the ANN is trained to evaluate the population of the GWO and acquire the individuals (wolves) with the best fitness, when this best fitness of the GWO is reached these GWO wolves are used to predict the values of the house based on the input values.

Keywords: MSE, ANN, GWO, Deep learning, Real-estate, Optimization

Report no 2 :

Visualizing Real Estate Property Information on the Web

A system called ReV (Real estate Visualiser) for exploring real estate property listings on the world-wide web.

It them visualizes this listing data using a map-based color coding technique.

Documents such as on-line product catalogs or real estate listings fall into this category variables which affect the price and desirability of a property.

ReV addresses this problem by using grammar induction techniques to automatically learn to parse pages from new websites

It can then generate a parser to search for that particular markup pattern and extract the price and address fields from any Hot Property page

Further features of interest within the long description that usually accompanies a listing (here, the number of bedrooms, for example)

Finally, if a postcode can be determined, either by matching a street name against a postcode database or by direct recognition of a postcode field, a cross-reference is created linking to supplementary information about the area (such as school quality or transport accessibility).

The user will be able to set ranges for each of the major property attributes, such as price, number of bedrooms, school quality

The proposed visualization concept is similar to that of **HomeFinder** , but differs from it in two important respects.

First, while HomeFinder used only fictitious data, this system draws data from real, current listings which are continually being updated.

Secondly, HomeFinder showed points only as either matching or not matching the criteria given and did not show any differentiation between listings.

Keywords : semantic units , geographically-based, HomeFinder

Report no 3 :

Comparison of Ensemble Methods for Real Estate Appraisal

This paper makes a comparative analysis of four ensemble methods, viz. Bootstrap Aggregating, Random Forest, Gradient Boosting and Extreme Gradient Boosting for real estate appraisal.

**The real estate website: 99acres**.

Grid search was used for fine-tuning the hyper parameters of the learning models. Also, preprocessing techniques such as dimensionality reduction and one-hot encoding were used for improving the accuracy of the model

Traditionally, the appraisal is performed by professional appraisers specially trained for real estate valuation.

For the buyers of real estate properties, an automated price estimation system can be useful to estimate prices of properties currently on the market. Such a system can be particularly helpful for novice buyers who are buying a property for the first time, with little to no experience

The prices of properties are dependent on many variables such as the location of the property, area, number of bedrooms, type of furnishing,

Attribute Definition:

Sale Price: The selling price of the property

Carpet area: The total usable floor area (square feet)

Built-up area: The carpet area plus the areas covered by inside and outside walls.

Super built-up area: The built-up area plus a portion of areas such as lobbies, staircases,

Etc.

Location: The locality of the house

No. of bedrooms: The number of bedrooms

No. of bathrooms: The number of bathrooms

No. of balconies: The number of balconies

No. of parking slots: The number of parking slots

Floor number: The floor number of the property

Furnishing type: The type of furnishing (furnished, semifurnished, unfurnished)

Flooring type: The type of flooring (marble, ceramic, vitrified, mosaic, cement, wood, granite, vinyl, stone)

Property type: The type of property (residential apartment, independent house or villa, independent or builder floor, farmhouse)

The Real Estate (Regulation and Development) Act, 2016, made it mandatory that the Sale Price should be quoted based on the Carpet Area. Hence, only Carpet area was used for the analysis.

Hyper-parameters are those parameters of an algorithm whose values cannot be estimated from the data.

Grid search was implemented to adjust the hyper-parameters of the models.

Keywords—ensemble methods; bootstrap aggregating; random forest; gradient boosting; extreme gradient boosting; real estate appraisal

Report no 4:

Analysis and design of the real estate property right registration information system for whole life cycle

It develop the information system for real estate property right registration

It can improve the real estate managers working efficiency and provide support for decision-making.

Real estate property right registration (REPRR) is defined as a behavior that records the rights information in register book by registration institution in accordance with related laws.

Real estate property right registration information system for whole life cycle (REPRRISWLC) by means of:

* User Case Diagram
* Class Diagram
* Sequence Diagram
* Collaboration Diagram
* Activity Diagram
* Object-Oriented analysis and Object-Oriented Design (OOA and OOD)
* using Unified Modeling Language (UML)
* Model View Controller (MVC)

An application system is built up which have consistent description and standard structure by combining the graphical representation organically.

UML model include static and dynamic model picture.

* Static model picture include Class Diagram, Object Diagram, Package Diagram, Component 398 Diagram and Deployment Diagram.
* Dynamic model picture include User Case Diagram, Sequence Diagram, Collaboration Diagram, Activity Diagram and State Diagram.

We make use of the use case diagram to describe the system requirement model.

* Use Case Diagram is the first step from system demand to system implementation. It describes system function from the user's perspective.
* Class Diagram is used to describe the system logic model. It describes static structure of class in the system, it not only defines classes of system, but also the relationship between classes and the internal structure of class.
* Sequence diagram is a visual representation of passing messages between objects in time sequence in order to describe the interaction process for each object in the system in accordance with the time sequence.
* Collaboration diagram shows how to interact between the object to carry out specific cases or the behavior of the particular part of cases.
* Activity diagram is used to describe the progress model. It is a complete unit, representing a program or workflow.

Report no5

Mining Real Estate Listings Using ORACLE Data Warehousing and Predictive Regression

The prospective real estate sellers and buyers to determine properties price

The prediction of Conthi-QUS values of properties selling prices is modeled by a statistical technique called predictive regression.

In the real estate world, key players are **brokers, agents, sellers, and buyers**.

When a seller decides to sell his/her house, he/she has to be represented by an agent. An agent who represents a seller is called a seIler agent. Seller agent will put the listing in the Multiple Listings Services (MLS) as an active listing. The active listing will become pending listing if the seller has accepted a buyer agent’s offer.

With the help of this data mining system, individual prospective real estate sellers and buyers now are able to determine current properties market value based on recent market values Qf similar properties.

We use Visual Basic .NET as an implementation tool for transformation and cleansing, preparing data to be loaded to the warehouse, data mining, and GUI.

When we load data to the warehouse we need to make connection to the Oracle data warehouse first and then pass queries from VB.NET framework to the Oracle warehouse

There are four major tasks in building a data warehouse:

(1) Extraction

(2) Transformation and cleansing,

(3) Modeling

4) Transport

Report no6

Estimation of the Investability of Real Estate Properties Through Text Analysis

Where real estate agents and brokers list real estate properties for sale. It is common that agents include textual comments pertinent to the property. Although the information content of comments varies, it is usually expressed in good faith and in many cases is helpful in shedding light on the overall condition and the value of the property.

Locate the ones that they should focus on to satisfy their clients, for rent, sale or investment purposes.

We first build a collection of real-estate-specific concept, a phrase that describes a real-world entity, such as “granite counter top,” to use for annotation.

Existing real estate lexicons include a limited real estate vocabulary:

Kitchen countertop” should match “kitchen counter.”

Method to computational house valuation

The data for each listing includes a set of structured **attributes** such as number of bedrooms and square feet that are used as features in real estate valuation techniques.

Report no 7

The perception of digital transformation on real estate websites

Digitization, also addressed as Digital Transformation, refers to the use of digital technologies, such as information, computing, communication and connection technologies to promote organizational changes.

We will limit our study to digital solutions adopted on real estate websites to improve the user experience when choosing a property.The volume of available real estate market data increases dramatically each year on real estate websites and integrated platforms.

The goal is to allow the user to contact (with the real estate agency) to fnd the best options for buying or selling real estate.

* Provide professional photos of the properties?
* Provide chat-bots available for users to contact the real estate company?
* Provide contact link via messaging application?
* Provide users with the possibility to visit the Properties through 360° tour or videos?
* Provide information regarding the neighborhood where the property is located?
* Provide a geo-location tool for properties?
* Provide a list of FAQs (Frequently Asked Questions)?
* Provide a digital transaction process? (digital contract signature)

There is a consensus that the national market is lagging behind in this regard. This occurs, perhaps because the sector is marked by formal requirements, where eye-to-eye contact can establish a relationship of trust.

These real estate companies have turned their websites into true virtual platforms, improving the customer experience when searching for properties, providing video of the properties, 360° Tour, as much information as possible, such as a list of FAQs,

chat-bots, link to messaging applications.

All these tools are to try to clarify the client’s main doubts and obtain additional information without the need for contact by phone or in person interaction at the real estate agency.

Report no 8

Automated Real Estate Retailing Website

The increasing number of potential buyers perusing listings through the Internet produces a high level of potentials and request for refined search engines. Customers can adjust the search standards to return good results. In a search, customers can specify a price range, location etc.

Customers can expect to discover clear and professional photos, virtual tours, loan calculators, area maps, local institute information, relative sales data of recently sold similar households within the same neighborhood, property taxes, and if obtainable, the prior sales price.

The study focuses on strategies used in building a website with enhanced capabilities by overcoming the drawbacks for property retailers. Keywords – digital marketing, land valuation, digital technologies.

Identifying existing website models in real estate industry:

Analyzing factors effecting land value:

* Location

• Year of valuation and year of construction

• Income

• Land value

Current Digital Marketing technologies used across the industry:

* Technology: Search Engine Optimization (SEO)
* Function: Used to get the highest rankings for web pages so the web page will appear in the top of the search results
* Search Engine Advertising (SEA): depending on the ranking of the site and the number of visits for the site.
* Eservice/Ecommerce: Carry on the business activities with the aid of telecommunication tools

It includes that real estate services deliver a fascinating model of an e-specific sector.

The most important factors that should be considered when creating the website were examined through the literature and **questionnaire**.

Key factors that a website that sells property online should contain in their commercialized real estate portals according to the study are mentioned below:

1. Virtual tours

2. Property listings

3. Transactions details

4. Market analysis

5. Project information

6. Online estimation

7. Online forum

8. Property updates

9. FAQ related to property

10. Online calculator

11. Lifestyle contents

The enthusiasm and the ways to pay for utility and gratification in numerous forms – convenience, less transport costs, additional space, security, public services and infrastructure, favorable living environment.

Report no 9

Real Estate Marketing Innovation System in the Era of Big Data

The purpose of this article is to improve the applicability of the content of the system and accelerate the development of the real estate economy.

Product Strategy improvement of the marketing innovation system under the background of the big data era is of positive significance for increasing the probability of real estate transactions and accelerating the development of the real estate economy.

* Big data has four characteristics:

1. huge data volume,
2. various data types,
3. low value density, and
4. fast processing speed

* Importance of Real Estate Marketing in the Era of Big Data
* Enhance the Value of Data Application
* Important Means of Restructuring Marketing Strategy
* Analysis of Real Estate Marketing Strategy:

1. **Product Strategy**
2. **Price Strategy**
3. **Promotion Strategy**

In the past real estate sales process, most of the sales information was promoted in the form of advertisements

Keywords: Big data Era; Real Estate; Marketing Innovation System;

Report no 10

TUTORING SYSTEM FOR REAL ESTATE MANAGEMENT

In order to create necessary conditions for individualised learning, to increase quality and effectiveness of distance learning, the intelligent tutoring systems are applied.

Intelligent Tutoring Systems (ITS) are software programs which provide instruction for a learner with guidance and insight in the way a teacher would guide a student.

Report no 11:

Read Estate and Property Management

The input analysis of this software includes;

• Customer Registration Page:

• Login Page:

• Buying Page:

• Renting Page:

• Logout:

• Forgot Password:

• Home Page:

Output Analysis of the Proposed System

• View Customer Info Page:

• View Buying Page:

• View Renting Page:

• View Seller Page:

Report no 12:

Recommendation system for real estate websites

To improve the efficiency and affordability of an online housing search, a user-oriented recommendation system for real estate websites, using ontology and case-based reasoning (CBR), was designed.

This paper, as the first half of our whole research, focuses on user requirements and search behaviors. This problem addresses not only the semantic construction of housing unit information but also all sub-mechanism designs for constructing a recommendation system.

The methodology was divided into four parts:

First, the functions and search procedures of current web-based housing search engines were analyzed.

Second, through a questionnaire and direct observation, we investigated user search behaviors to extrapolate user requirements.

Third, the semantic relationships between information segments were represented in an ontological structure from the knowledge collected in the real estate domains.

Finally, the case representation was clarified and case indices were specified to calculate similarity between homebuyer’s queries and cases.

Investigated the listing information of existing real estate brokerage websites, including information on geographic region, price, square footage,

Features: (e.g., fireplace, swimming pool, gas versus electric),

financial factors (property tax information, insurance, association fees),

information on recent comparable sales, information on the surrounding area (schools, shopping, recreation), types of photos available (house exterior and interior), and other factor.

These categories represent most of the information on real estate websites.

* Location Distance: By bus, By subway, By taxi, By private car, On foot
* Convenience Environment: Government office, Mart, Hospital, Infrastructure, Park, Playground, Parking, Fitness center, Security Guard, CCTV etc.
* Education Environment: University, High school, Middle school, Primary school,
* Transportation: Bus station, Subway, Railway station, Airport Facility,

Housing unit property: Apartment Size (m2 )

* Single-room Bathroom
* Villa Bedroom
* Single-house Balcony
* Office building
* Multi-storey

Price: Property cost Ranges according to the market quotation

Rent cost Deposit rental Ranges according to the market quotation

Monthly rental Management fee

Report no 13:

Management Information System of Real Estate

According to the needs of administrative field and its business, four modules are built in the system: management and decision of real estate developing, market management of the real estate, estate management and daily management.

Developing the direct monitoring function of system the scientific management to environment, public security and fire, community’s culture, owner’s information, estate defense, employment

The service for estate is the most important link of **after sale service** in the management of the real estate. The economic benefits of the real estate are influenced indirectly by its quality.

According to relevant service content of estate management the following functions have been designed:

(1) The property maintain, who can accomplish such works as counting the household’s information of reporting for repairing, managing complain of the customer, ordering maintenance time and calculating its cost.

(2) Security, sanitation, tire, community’s culture, it can not only manage community’s iridescence, the establishment of ensuring public security, personnel, system and basic situation, etc.

(3) The inside management, the employment, post responsibility, examining, rewards and punishments, goods and materials, etc, are managed by it.

(4) The house property management, the building state, house file and affiliated facility are managed.

Report no 14

Real Estate Market Structure and Technological Innovation

Market structure refers to the degree of market competition, monopoly power and enterprise scale; technological innovation means to draw some new combination of production factors into production system to increase the competitiveness of enterprise; but technological innovation is restricted by many complex factors, the market structure is one of the most important impact factors

Researches on the relationship between technological innovation and enterprises scale have never ceased.

About the relationship between market structure and technological innovation, one of the most important aspects is to investigate the impact of market concentration on technological innovation. Many studies have found that market concentration and technological innovation had a positive correlation.

The real estate enterprises in technological innovation refers to the development of new products, new technology applications, new technology in the real estate industry. The innovation of the real estate industry began from the concept of development through the production, marketing, management and all aspects of services. The core of innovation is the customers can got the maximum value at cost of the lowest total cost, that is creating the maximum customer delivered value.

1. The Real Estate Technology Innovation Will Help to Optimize the Structure of the Real Estate Market

2. Technological innovation of real estate enterprises will help enhance the core competitiveness of enterprises in real estate market

3. Technological innovation is conducive to the expansion of enterprise scale

4. Technological innovation is conducive to the improvement of market concentration

Report no 15:

Factual Dimension Identification and Usage for Real Estate Framework

Key Performance Indicators (KPI’s) are a sort of execution estimation. KPIs survey the accomplishment of an affiliation or of a particular development in which it secures. Often accomplishment is essentially the repeated, irregular achievement to couple

of time accomplishment is described similar strides toward fundamental objectives.

Classification of Indicators:

Key Performance Indicators describe a course of action of characteristics against which to gauge.

There are two classifications of estimations for KPIs.

• Quantitative realities without bending from individual emotions, partialities, or elucidations gave a particular

• Qualitative qualities affected by individual emotions, tastes, or feelings and exhibited as any numeric value.

Key Performance Factors Of Association:

* Customer name
* Customer business
* Customer city area
* Contact number
* Price of whole property as per government rate
* Property description (Plot/Kothi/Flat/Shop etc.)
* Property type (Constructed/ Non-constructed)
* Registry amount
* House number
* Time taken for registry
* Property facing (north, south, east, west) Commission per sale
* Registration fee
* Property major description Residential/Commercial House price index