How Innovation & Automation Will Change The Real Estate Industry

A Conversation with Mark Lesswing & Jeff Turner
People worry that computers will get too smart & take over the world, but the real problem is that they're too stupid & they've already taken over the world.

Pedro Domingos
We’re Already Controlled

[ ALGORITHMS ]
Facebook & Google
Shape How We Interact With The World
Algorithmic Trading

Less Than 10% of Stock Is Bought/Sold By Discretionary Traders
The Robots Are Coming
Humans Are Replaceable
The Iron Roughneck
Automates Connecting Drill Pipe Segments
440K Oil Drilling Jobs Were Lost In The Recent Oil Price Downturn,
220K Will Never Come Back

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Robot Redefined

The Most Powerful Bots Will Have No Physical Form
Artificial intelligence is the new electricity.

Andrew Ng
ARTIFICIAL INTELLIGENCE
Early artificial intelligence stirs excitement.

MACHINE LEARNING
Machine learning begins to flourish.

DEEP LEARNING
Deep learning breakthroughs drive AI boom.
Artificial Intelligence

Human Intelligence Exhibited by Machines
Artificial Intelligence

• We have had “Narrow A.I.” capabilities for some time, with very little true movement in the space, until 2012. We’ll get to that in a minute.

• What we can do today generally falls into the concept of “Narrow A.I.” Technologies that are able to perform specific tasks as well as, or better than, we humans can.

• Examples of Narrow A.I. are things such as a Chess game. Face recognition on Facebook is also Narrow A.I., but it requires the next definition - Machine Learning.
Machine Learning
An Approach To Achieve Artificial Intelligence
Machine Learning

• Machine Learning at its most basic is the practice of using algorithms to parse data, learn from it, & then make a determination or prediction about something.

• So rather than hand-coding software with a specific set of instructions to accomplish a task, the machine is “trained” using large amounts of data and algorithms that give it the ability to learn how to perform the task.

• Your spam filter is a form of Machine Learning. Computer vision, recognizing a STOP sign or your face on Facebook, is a form of Machine Learning. In Real Estate, AVM’s are an example.
Automated Valuations
For Real Estate - Look At Zillow & HouseCanary
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A fast and flexible valuation tool that can replace BPOs and 2055 & 1004 Appraisals.

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Deep Learning
A Technique For Implementing Machine Learning
Deep Learning

• Picking images of cats from 10 million YouTube videos was one of the first breakthroughs by Andrew Ng in 2012.

• Deep Learning involves neural networks, which have been around since the earliest days of AI, but had produced very little in the way of “intelligence.” The problem was even the most basic neural networks were very computationally intensive, it just wasn’t a practical approach… until GPU’s.

• Google’s AlphaGo learned the game, and trained for its Go match — it tuned its neural network — by playing against itself over and over and over.
Google Translate & Duplex

Google Is Not Waiting For The World To Catch Up
Connected Communities
Tapping Big Data In An Attempt To Solve Complex Issues
Connected Communities

• Just as homes are becoming smarter, entire communities are following suit. Urban planners are tapping big data to attempt to solve issues like predicting rat infestations, scheduling mass transit, mitigating urban flooding, improving environmental quality, and hundreds of other problems faced by municipalities.

• One of the leading examples is a project called the Array of Things in Chicago, IL.
Big Data

Data Sets So Complex They Require New Analysis Tools
Big Data

- Data sets that will affect the real estate industry include smart-home data, connected community data, social media, consumer spending data, data about crime, businesses, environment, noise, and air quality.

- More importantly, there are massive data sets that have yet to be effectively tapped concerning buyer activities and motivations. This includes information about where the buyer travels, eats out, shops, and works. How often the buyer walks, takes public transit, or drives a car. What sort of political persuasion they tend toward, what kinds of news they read, what types of values they exhibit.

- In most situations, collecting this data would be considered a massive invasion of privacy, but robots will change that.
Open Data
Information That’s Available To Anyone In The Public Domain
Open Data

• One example of open data is the aforementioned Array of Things project in Chicago. All of the data collected by these sensors is freely available to the public. There are nearly two hundred thousand open data sets now in existence on data.gov. In the Chicago suburb of Evanston, IL, there are data sets that include shape files (boundary maps) for business and historic districts. There’s even a geolocated database of every tree in the city.

• While the real estate industry seeks to retain control over real estate listing data, the world around those listings, including both the property being marketed and the people who want to buy or sell it, is rapidly expanding and open to the public.
Blockchain
A Chronological, Digitized, Decentralized, Public Ledger
Blockchain

• Blockchain is a public register in which transactions between two users belonging to the same network are stored in a secure, verifiable and permanent way. The data relating to the exchanges are saved inside cryptographic blocks, connected in a hierarchical manner to each other. This creates an endless chain of data blocks -- hence the name blockchain -- that allows you to trace and verify all the transactions you have ever made.

• The primary function of a blockchain is, therefore, to certify transactions between people.
NAR Focus

The National Association of REALTORS® Sees Artificial Intelligence As An Emerging Technology That Demands Attention.
Big Data, Smart Homes, Open Data, & Connected Communities - Big data in real estate has been a primary subject of research for NAR’s R&D technology group, The Center for REALTOR® Technology (CRT).

Blockchain Technology - Mark Lesswing, NAR’s CTO, has released two papers to educate the real estate industry on this technology.

Machine Learning - NAR’s Data Analytics Group stays apprised on machine learning through sponsorship and participation in the Chicago ML group on meetup.com.

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