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Wealth Planning & Investment Management

Business Trend - The Rise In Algorithms: What Are They, and Are They Correct?

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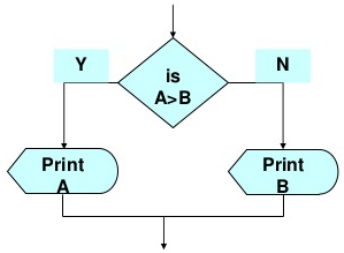
ALGORITHMS: What Are They?

EXAMPLE OF A SIMPLE ALGORITHM

IF–THEN–ELSE STRUCTURE

- The algorithm for the flowchart is as follows:

```
If A>B then
   print A
else
   print B
endif
```



DICTIONARY.COM DEFINITION al·go·rithm/ˈalgəˌriTHəm/*noun*. *A* process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

An algorithm is a formula that allows a computer to calculate an outcome or series of outcomes based upon the data that is input. You interact knowingly or unknowingly with algorithms every day.

Examples of Common Algorithms:

-Automated Phone Attendant
-Automated Help desks at Utilities
-Most Automated Surveys
-Sandwich Ordering Kiosks
-Telephone banking

Examples of Hidden Algorithms That Iimpact You Everyday:

-Voice or biometric recognition systems that provide access to phones and computers
-Face Recognition Systems used by the government to scan for terrorists
-License plate scanners used by police to scan for criminals and scofflaws
-Credit scores used to approve or deny credit
-Customer Life Time Value Scores that determine how you are treated by merchants

ALGORITHMS: Why and How Are They Being Used?

An algorithm is a series of business rules applied to databases that allow the user to quickly and efficiently automate research tasks.

The research tasks that can be completed by an algorithm in a split-second can take a human a day to calculate.

Algorithms are being used to exploit the 2.5 quintillion bytes of data created each day (2.5 quintillion pennies would, if laid out flat, cover the Earth five times).

Use Example One: You are at the airport and your plane gets cancelled. Do you ever wonder why it takes five minutes for customer service to answer your airline rebooking request, but the young lady right beside you got right through and was immediately rebooked. Furthermore she was upgraded. When you finally get through they claim to be out of seats but for a $300 charge they will get you on the midnight flight. What happened? The airline using an algorithm identified your phone number, calculated your consumer lifetime value and treated you accordingly.

Use Example Two: You are a busy person, in fact you are so busy you rack-up 15 parking tickets a week. You'll pay them soon! On the way home a police car passes you the opposite way, all of a sudden the blue lights are flashing and the friendly officer escorts you to the back of the squad car. Using a side-scan license plate reader the police are searching for scofflaws, your plate is scanned, the algorithm

ALGORITHMS: Are Not Oracles, They Are Not Infallible

There are three weak links in the algorithm driven economy: 1) The accuracy of the underlying database, 2) Hidden biases or undetected coding errors in the algorithm and 3) Partially developed data collection technologies.

- DataBase Corruption: A small corruption in a database may cause you to be erroneously identified as a serial merchandise returner and your Consumer Lifetime Value Score plummets and now you no longer receive discount coupons.

- Early Stage Collection Devices. Technologies such as high-definition cameras positioned at the proper angle to collect biometric data are not presently mission-ready causing a number of false indications

- Incomplete Databases: Your facial biometric data is absolutely unique but it's similar to millions of individuals, however the database only has 50 examples to compare your face to so it tags you as a potential terrorist at the airport. The considerate TSA agent then invites you to a strip search and interrogation room…

- Built in Biases: The coder of a database uses a well meaning, but incorrect bias that says men are have a lower purchasing score than women shoppers in certain boutiques and, by-the-way, if you are over 50 you will likely not be a repeat customer. All of a sudden you went from being invited to all of their receptions and special events to being treated as a persona non-grata.

ALGORITHMS: Proceed With Caution

The automation of so many decisions that impact so many facets of our life has great potential for Governments and Corporations but comes with a high degree of peril for individuals.

Since the formulas embedded in algorithms are considered secret it's not easy to discern inaccurate decisions, particularly when a lower level employee is interfacing with the public. The employee will stick with the algorithm's decision "because its right" and because they have absolutely no idea how it works or how to fix it.

With all the data created everyday it's virtually impossible to determine if an incorrect database or corrupt data was used in the calculation impacting you.

Undoubtedly increased claims of racial, sexual and economic bias, erroneous data bases and other issues that result in denials of service or discriminatory treatment will wend their way through the courts.

Court decisions may ultimately temper the use of these first generation algorithms, but improved design, scrutiny of illegal discriminatory practices, better databases and most likely the ability of customer facing employees to judge the results of the algorithm and perhaps override it's decision will enable the second generation of these algorithms. Just look at IBM's Watson (an example of Artificial Intelligence not an algorithm) probability based answers. It provides both an answer and a probability score that the answer is correct.