

Algorithms Might Save the World

Imagine a machine that you stand in front of and it tells you your family bloodline history and heals any illness you might have. It is said Nikola Tesla invented a healing machine similar to this (Tesla, 1898). Algorithms are the glue that hold these systems in place, make them repeatable for others, and provide a black box of abstraction for others to build onto. Our computer software uses algorithms to store and distribute data as needed. They are used in everything from water treatment, farming, automobiles, etc. Effectively math is used to produce, control and maintain large systems with many moving parts. People in various fields are using algorithms to make life easier. Nature and physics is inspiring scientists to solve problems with more elegant and creative algorithms. For these reasons, I believe algorithms applied with good intention may save the world.

What do I mean when I say algorithm exactly? The Marriam-Webster dictionary describes an algorithm as "a procedure for solving a mathematical problem in a finite number of steps that frequently involves repetition of an operation." Math equations may have to go through many changes to fit a specific situation. For example, two professors describe the "Steps to developing a usable algorithm" like this (Sedgewick, R, & Wayne, K, 2011):

- Model the problem
- Find an algorithm to solve it
- Fast enough? Fits in memory (i.e. resource constraints)?
- If not, figure out why.
- Find a way to address the problem.
- Iterate until satisfied

I believe these steps can be and are applied to many industries to help solve complex problems or just maintain overall harmony in their ecosystems.

If we could combine something like Tesla's healing invention mentioned above with human genome information about our DNA which can give us an idea of our genetic tendencies and microscopic technology to monitor microbe diversity in our environment, maybe we can solve all health and environmental problems. They say that our DNA is only made of 4 different elements positioned in unique ways . DNA sequencing is the system used to identify these structures (Field & Davies, 2015).

Nature inspired algorithms, such as the way a school of fish moves and interacts, are inspiring engineers to build better data systems. Ants, bees, bats and more are observed by mathematicians that develop formulas based on an animal's natural habits (Yang, 2014). Even the way bees pollinate flowers is utilized in technology through algorithms . Scientists are using algorithms and data to test theories and solve challenging problems. Uses include the simple but necessary optimization of emergency wait room times by MIT PhD student Kuang Xu (Fujimori, 2013), to the more complex issues like automation and communication systems.

References

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