What's the deal with Algorithms

As UCLA's John Villasenor points out, even something as innocuous as a recipe or a list of directions to a friend's house can be understood as an algorithm. Things are a bit more complicated in the computer science context where the term most often comes up, but only ever so slightly. In his book *The Master Algorithm*, Pedro Domingos offers a masterfully simple definition: "An algorithm is," Domingos writes, "a sequence of instructions telling a computer what to do." As Domingos goes on to explain, algorithms are reducible to three logical operations: AND, OR, and NOT. While these operations can chain together in extraordinarily complex ways, at core algorithms are built out of simple rational associations.

Algorithms these days are used for a host of purposes, such as automating stock market trading or serving ads to website visitors. One of the earliest applications of this technology - one that they're still working on - was so-called machine vision, in which computers try to identify the various elements of a picture. It's the kind of system that can tell you (or claim to) how hot you look in a picture.

Machine vision is an important example, since it also demonstrates the way algorithms often learn how to do their jobs better by messing them up, sometimes very publicly. Those errors can be silly, as when Wolfram Alpha *(a computational knowledge engine or answer engine developed by Wolfram Alpha LLC, a subsidiary of Wolfram Research)* mistakes a cute baby goat for a dog, but they can also be downright ugly, as when Google Photos misidentified two black people as gorillas. No one consciously taught the system to form racist conclusions, but the parameters that the programmers set up may have primed it to arrive there. Relying on machine learning is risky because these are systems that learn to get things right by repeatedly getting them wrong. Working with them therefore entails accepting almost inevitable errors and screw-ups.

If you would like to submit a question or suggest a topic for future column consideration, please email your questions or comments to: info.vpcuc@gmail.com

The next monthly meeting of the Vernon PC Users' Club will be Tuesday, February 13th, at 7:00 PM in the cafeteria at the Schubert Centre.

We start off every meeting with a 'TANSQ' session. Come check us out!

Call Betty at 250-309-1590 or Grace at 250-549-4318 for more information.