Person of Interest vs. Real Life

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This weekend news organization reported a likely threat in Northern Virginia malls https://twitter.com/MikevWUSA/status/1454120891869192198 . The short timeframe and combination of some specific and some vague details in the reporting reminded me of the information given to the main characters by the AI in the TV show Person of Interest (https://www.imdb.com/title/tt1839578/). Although this threat was (almost) certainly not identified by a surveillance network feeding data to a fully autonomous supercomputer, it made me think about the ways in which we've moved closer to the future imagined in Person of Interest, and some of the ways we've moved away from that future since the show first aired in 2011.

How We've Moved Closer

1.) Surveillance camera coverage is increasing. According to https://www.comparitech.com/vpn-privacy/the-worlds-most-surveilled-cities/ at least one city in three different countries (UK, China, India) has more than 1 camera per 20 people, and one city in China has more than 1 camera per 10 people (Taiyuan). Two cities (London and New Delhi) have more than 1000 cameras per square mile, and 9 countries have at least one city with more than 100 cameras per square mile. Incredible amounts of raw data were the foundation of the Person of Interest AI, and we're capturing more and more data every single data.

2.) Computing power continues to increase. According to https://siliconangle.com/2021/04/10/new-era-innovation-moores-law-not-dead-ai-ready-explode/ , while by some traditional metrics Moore's Law (the doubling of computing power every two years) has faltered in the last 10 years, phenomenal increases are still being made to processing speed and for some systems are doubling annually. Networking and data storage can't quite keep up, but we're definitely progressing towards the computational power required for a Person of Interest type AI.

3.) Artificial Intelligence is an increasingly important way of using increased processing power to deal with huge amounts of data, and "Black Box" (unexplainable) models trained on huge datasets have produced some of the most impressive breakthroughs in AI in the past few years. AlphaGo surpassed the best human Go players in the world surprisingly quickly, for a game with a huge state space where pros continued to dominate bots for nearly 20 years after Deep Blue surpassed the best Chess players in the 90s. This achievement used advances in Neural Network Deep Learning techniques as well as processing power that would have been prohibitive in 2011. Perhaps most impressively, AlphaZero replicated this level of playing strength without training on any pro games, only learning by self-play. In just a couple of years since then, the AlphaGo team leaped from turn-based games of perfect information-like Go/Shogi/Chess to

real-time games with hidden information like Starcraft, with equal success. AI is doing things that were the realm of Science Fiction in 2011, and Person of Interest style inferences seem slightly less impossible every year.

How We've Moved Further

Although the basic tools at our disposal (raw data, processing power, AI capabilities) make the Person of Interest AI less technically far-fetched, the way we use them is trending in the opposite direction. There has been a massive push for explainable AI in every field from chess (https://decodechess.com/ goes into *why* each move is good or bad, instead of only showing the best move with no explanation) to commercial banking where it's illegal to discriminate based on protected classes, and there's a legal requirement to demonstrate your model treats customers fairly. In 2011 we were willing to accept a large degree of mystery in "how" a model works as long as it was highly accurate and required an acceptable level of training time, training data, and inference speed. In 2021 that's no longer good enough. We have better tools, more raw power, and our expectations have increased as well.

Emphasizing explainability and fairness helps ensure more opportunities for human oversight and corrections than the black box AIs imagined in Person of Interest, and helps keep us farther away from accidentally creating a rogue AI ready to take over the world like SkyNet.