

How the future of forensics will be affected by A.I., Machine Learning, and Autonomous Vehicles

Definitions

Artificial Intelligence

The term artificial intelligence (AI) refers to computing systems that perform tasks normally considered within the realm of human decision making. Forms of AI in use today include, among others, digital assistants, chatbots and robots.

Machine Learning

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves.

The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that humans provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

Autonomous Vehicle

An autonomous vehicle uses a combination of sensors, cameras, radar and artificial intelligence (AI) to travel between destinations without a human operator. To qualify as fully autonomous, a vehicle must be able to navigate without human intervention to a predetermined destination over roads that have not been adapted for its use.

The Future

Near Future Changes (Next 5 years):

AI: Advances in robotic healthcare technology, 3D printing, and task automation affect different workforces by reducing the need for repetitive labor.

ML: Predictive analysis of “big data” make prescription drug and patient care modeling accessible.

AV: Continued research and legal exploration of self-driving cars sparks ongoing state-by-state debate.

Near Future+ Changes (Next 5 to 10 years)

AI: Jobs more deeply affected by robotic and mobile device artificial intelligence advancements, with service industries and healthcare deeply affected.

ML: Predictive modeling for medical diagnoses and pharmaceutical production will expand and impact rehabilitation professionals.

AV: Legalization of autonomous vehicles forces state-by-state legislation that addresses safety regulations as traffic accidents related to motor vehicles decrease, affecting rehabilitation practices.

Distant Future Changes (Next 10 to 20 years)

AI: Virtually every sector of society is impacted by advancements in AI, including: transportation, manufacturing, education, customer service, media, and healthcare. Within healthcare, pharmaceutical discovery and production is streamlined, diseases are readily assessed, and big data affects patient monitoring and expands genetic profiling. Security definitions and ethics must be evaluated carefully in an era of blurred distinctions between authentic, and automated, human interactions, including within the rehabilitation industry.

ML: Genetic hacking and augmenting biology with technology like RFID chips proliferates as people across industries and workforce sectors try to make all aspects of life “programmable.” A codified ethic for automation and data use must be considered as technological changes proliferate.

AV: “Smart” infrastructure expands from autonomous vehicles to structures and cities themselves, as data standardization, detection, delivery, and interpretation make information a currency as valuable as money itself.

Preparing for Disruption

As you experience technology’s exponential growth, consider the following pointers to leverage AI and machine learning to disrupt yourself before it reaches you first:

- Determine where and how you can begin collecting critical data to inform your decision making
- Identify time-intensive processes that can be automated and accelerated within your practice
- Discern which professional challenges can be solved by hyper-fast, all-encompassing technology

Remember: Well-defined problems create the best foundation for practical solutions. Reliable and sound data is the fuel for sound decision-making. Implementing AI now will give you the technical, and likely, the professional advantage.

How to Adapt

Early computer science pioneer Alan Key observed, “the best way to predict the future is to create it.” By taking a proactive approach to understanding the rapidly-evolving fields of machine learning, artificial intelligence, and autonomous vehicles, rehabilitation professionals can embrace technological advancements like predictive modeling, search engine optimization, computer vision, and automation to better assess client/evaluee needs. Rather than fearing technological changes, we should embrace its benefits while fully exploring its risks and costs.

Resources

- Websites
 - [The Medical Futurist](#)
 - [Machine Intelligence Research Institute](#)
- Books
 - Bertalan Mesko, *A Guide to Artificial Intelligence in Healthcare*, 2019.
 - Martin Ford, *Rise of the Robots: Technology and the Thread of a Jobless Future*, 2016, Basic Books.
 - Eric Topol, *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*, 2019, Basic Books.
- Articles
 - [Short-term implications of AI](#), from *Current Affairs: A Magazine of Politics and Culture*, Ryan Metz, November 2018.
 - [Effects of AI and Automation on Healthcare Employment](#), *RevCycleIntelligenceOnline*, Jacqueline LaPointe, January 2019.
 - [“Artificial Intelligence in Healthcare: Past, Present, and Future,”](#) *Reserach Gate Publications*, 2017, Fei Jiang et al.
 - [“The Driverless Car Is a Great Opportunity for Healthcare,”](#) *The Medical Futurist*, November 2016, Bertalan Mesko.