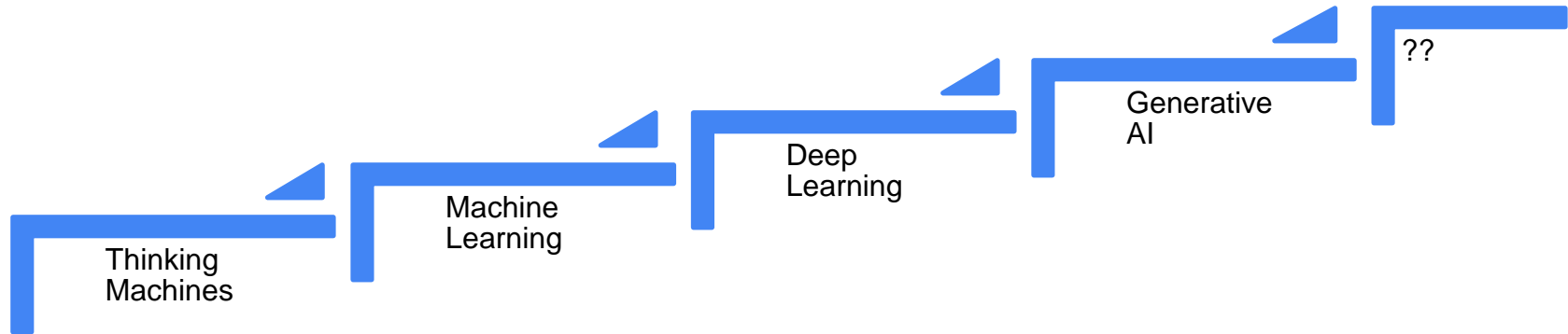


Impact of AI on Public Health

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AI



Purpose and Significance

- To aid our acumen and curiosity to learn, understand and act
- Empowering experts to make faster, better decisions
- Deriving insight out of complex data
- Leverage amount of data produced by devices and the Internet of Things (IoT)
- Frequent high volume computerized tasks without fatigue
- Adds intelligence
- Progressive learning
- Accuracy with deep learning

Considerations

- Ethics and Governance
- More the data – more the power to change
- Domain expertise – is a high value need
- Data Richness and AI correlation
 - AI without data is useless, Mastering data without AI is insurmountable
 - More the merrier – data and depth

Public Health and AI

- Disease Surveillance and Analyzing factors to prevent spread
- Analyzing Unstructured data
- Forecasting trends using heterogenous data sources (Overdose)
- Outbreak data and identifying sources
- Intelligent Automation

VDH Current AI/ML Use

- Hyper-Automation
- ROTBOT
- Chatbots
- Record Linkage Accuracy (Expectation Maximization Algorithm)
- Machine Learning Classification Algorithm to detect linguistic and ethnic naming patterns

VDH Planned AI/ML Use

- Analyze website and web server logs for sentiment analytics and actionable insights
- Conversation AI
- Machine Learning model that will predict ICD-10 Underlying cause of death based on text fields in the Mortality Record
- Master patient index – Advance matching techniques from information across multiple data systems
- Policy for Ethical Use of AI
- Analyzing historic ODData to predict model for future events

Specific AI Use Cases across Public Health

- Improve speed and accuracy in surveillance by automatically detecting tuberculosis from chest X-rays
- Accelerate outbreak response to Legionnaires' disease and prevent future disease by automatically detecting cooling towers from aerial imagery
- Enhance vaccine safety monitoring by using natural language processing (NLP) methods to analyze massive amounts of free text for potential safety signals
- Use more of the data we have:
 - Identify opioid-related terms on death certificates, even if they're misspelled
 - Impute missing data from surveys, or fix sparsity in geographical sampling
- Use non-traditional data sources, including images, audio, social media, and data not specifically collected for public health analysis, such as electronic health records
- Optimize case definitions for more accurate and efficient surveillance
- Discover patterns in clinical data and identify predictors for clinical outcomes

- **VDH Use Cases - 1 to 2 ideas
each table**