Leveraging Machine Learning and Artificial Intelligence: Is the Buzz Real?

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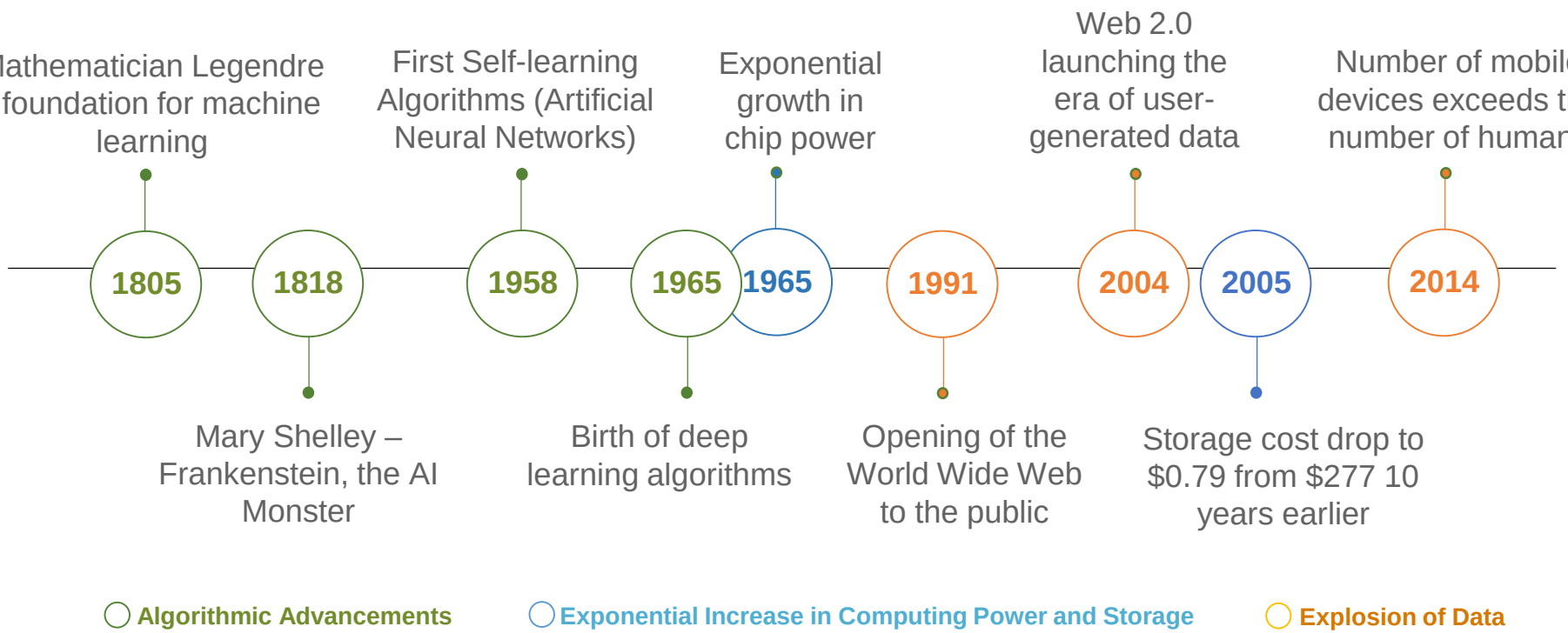
Artificial Intelligence. From Hype to reality

A convergence of **algorithmic advances**, **data proliferation** and **tremendous increase in computing power and storage** has propelled Artificial Intelligence (AI) from hype to reality.



Artificial Intelligence. Today in Healthcare

AI is **revolutionizing** the **healthcare industry in many areas**. Hence, it is not only rising to be a **top priority** for the majority of **pharmaceutical companies**, but also increasing the **attractiveness** of the healthcare industry to the **government** and to **non-pharma firms.**

2016 2017 2018

UCB is implementing AI in settings across **research & early development**, **regulatory and safety**, **manufacturing / supply chain**, and enabling functions (i.e., **Purchasing & Finance**)

France puts **healthcare** at the heart of $1.8B **AI strategy** with the commitment to open access to the **French patient data**. French President Emmanuel Macron recognizes the **potential of AI** in making **medical care** more **predictive** and **personalized**.

WATCH

Apple has added a new **'Movement Disorder API'** to its open-source Research Kit framework that will allow Apple Watch to continuously **monitor Parkinson's disease symptoms-tremors and dyskinesia.**

amazon

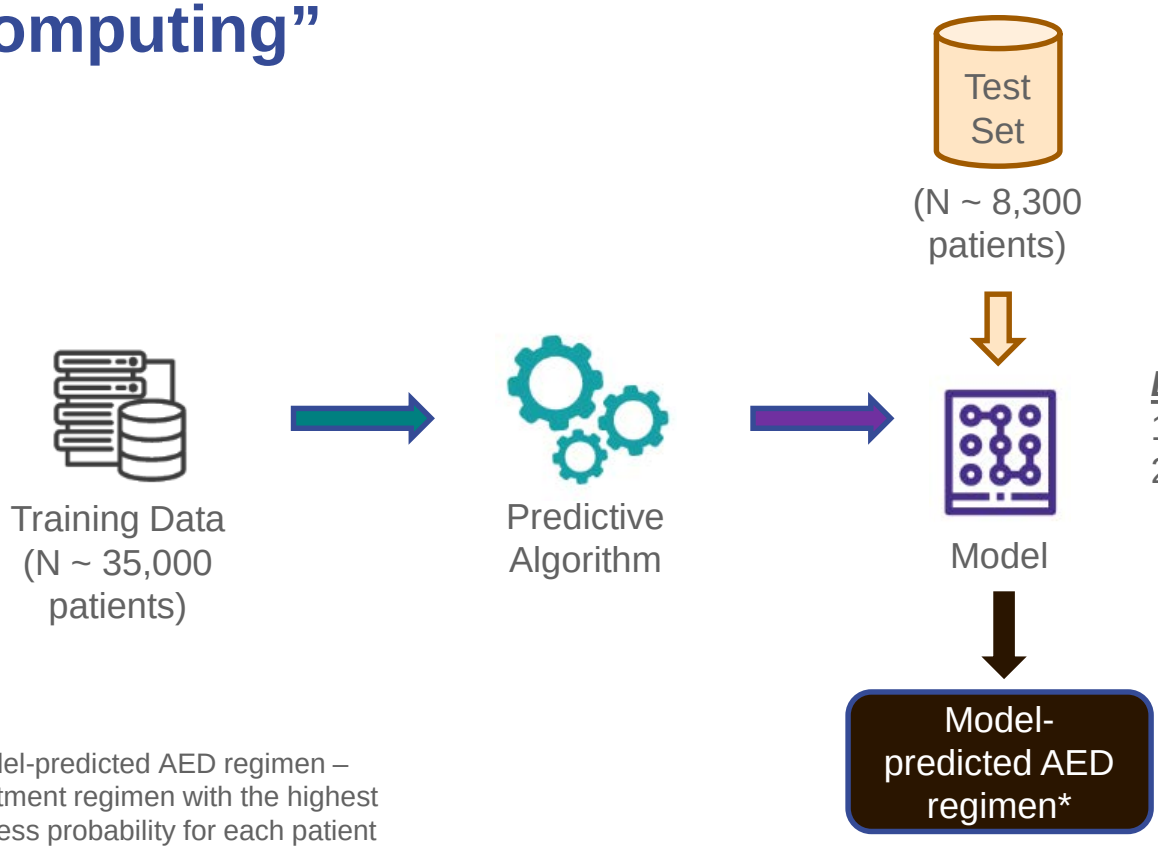
In addition to the PillPack acquisition for drug delivery and the joint healthcare venture with JP Morgan and Berkshire Hathaway, Amazon is focusing on growing **Alexa's healthcare skills** to improve the patient experience and helping users manage a **chronic illness or helping the elderly** (e.g.: remind people to take their medication).

AI Enables Prediction Models and CDS Innovations, Which May Enhance Patient Care & Outcomes

- Enable earlier patient identification and diagnosis
- Reduce total cost of care
- Enhance patient outcomes/ adherence
- Improve workflow efficiency and referral optimization
- Allow for adoption of appropriate treatment/ care pathways
- Increase performance metrics

While many companies are pursuing machine learning approaches, clinical expertise in the disease area and deep knowledge of the market dynamics are required to contextualize the data, bring appropriate resources together, and fit solutions along the clinical workflow

A Machine-Learning Approach: Leveraging "Cognitive Computing"



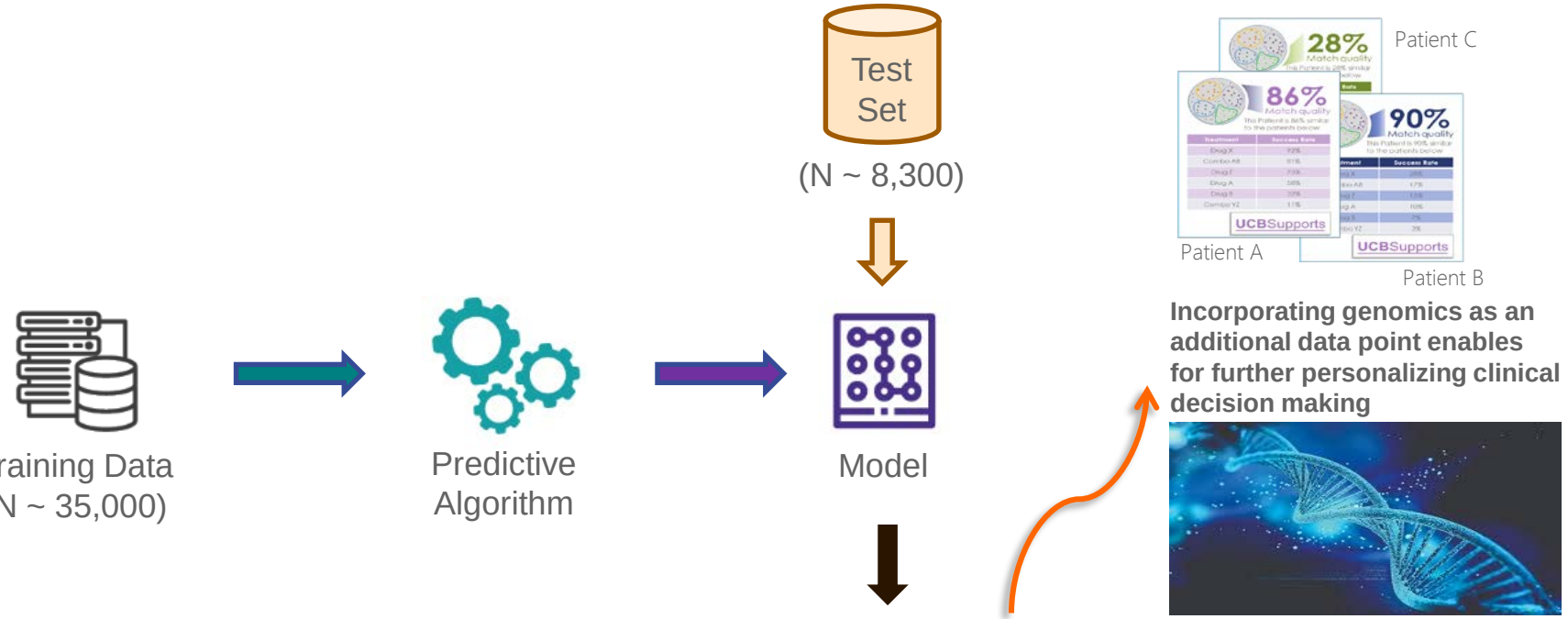
***Evaluation of Predictions*:**

1. Treatment change rates
2. Utilization of health-care services

***Model-predicted AED regimen – Treatment regimen with the highest success probability for each patient

Devinsky O, Dilley C, Ozery-Flato M, et al. Changing the approach to treatment choice in epilepsy using big data. *Epilepsy & Behavior*. 2016;56:32-37.

A Machine-Learning Approach: Potential Next Steps



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Artificial Intelligence: is the Buzz Real?

Computer models might be able to help HCPs choose seizure medications with a greater chance for positive outcomes - “Personalized Medicine”

Unmet Patient Needs:

(Optimizing AED choice)

- Seizures in ~ 60% of patients respond to their first AED
- 15% spend 2 - 5 years finding an effective AED regimen
- 25 - 30% are treatment resistant

Value Proposition:

Providers	Evidence-based, real-time recommendation. Removal of “guessing game” in treatment decision.
Patients	Improved outcomes. Reduced utilization of healthcare resources. Precision and personalized access.
UCB	New source of patient value “The Right Patient gets the Right Drug at the Right Time*”

***Drug is not necessarily a UCB drug**