



**Hewlett Packard  
Enterprise**

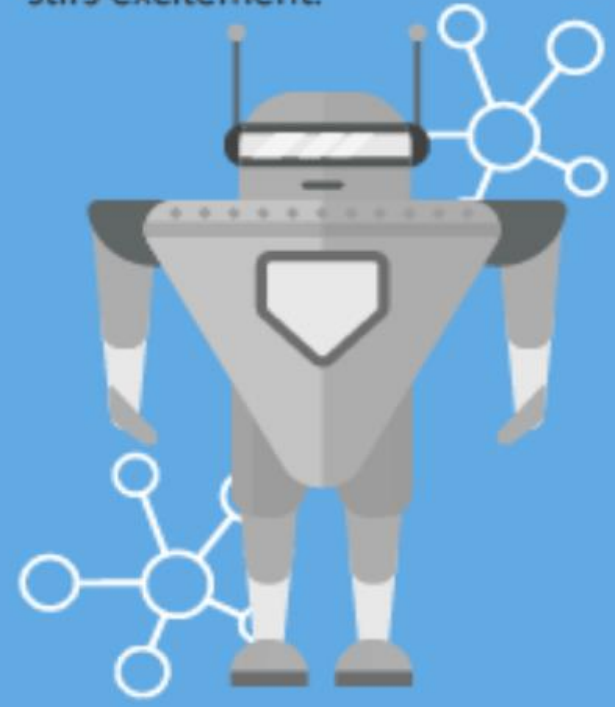


**Fundamental of AI for Health.**



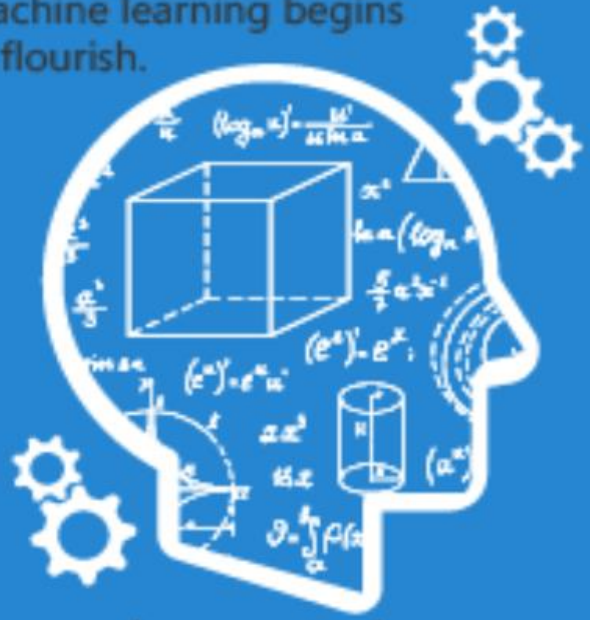
# ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



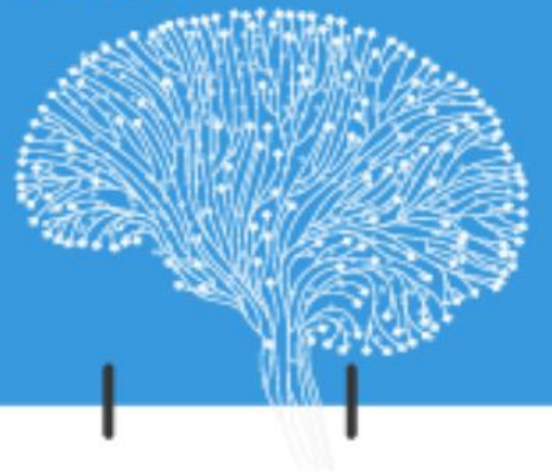
# MACHINE LEARNING

Machine learning begins to flourish.








# DEEP LEARNING

Deep learning breakthroughs drive AI boom.



# The AI ecosystem is evolving fast...

<b>Applications</b>	Intelligent applications built on AI platforms, or leverage AI APIs to deliver intelligent services	<p>“40% of all <b>digital transformation</b> initiatives, and <b>100% of all IoT</b>, will be supported by <b>AI</b>”</p> <p>– IDC</p>
<b>AI Services</b>	Higher-order AI services and building blocks (e.g. speech recognition, natural language processing)	
<b>AI Platforms</b>	AI platforms AI frameworks, software, APIs	
<b>Data Platforms</b>	Data collection, preparation, enrichment Data science platforms	
<b>Data Infrastructure</b>	Data repositories and management	
<b>Hardware Infrastructure</b>	Hardware optimized for machine learning, data platform, data infrastructure	

# AI in healthcare

**30-50%**

productivity improvement  
for nurses using AI

**5-9%**

Health expenditure savings  
using ML to tailor treatments

**\$2-\$10T**

Savings thru tailored drugs

Autonomous diagnostic  
devices using AI

Interactive kiosks register  
patients and triage

Personalized treatment  
plans designed by ML

ML uses monitors to warn  
of possible disease

ML uses monitors to  
recommend fitness routines

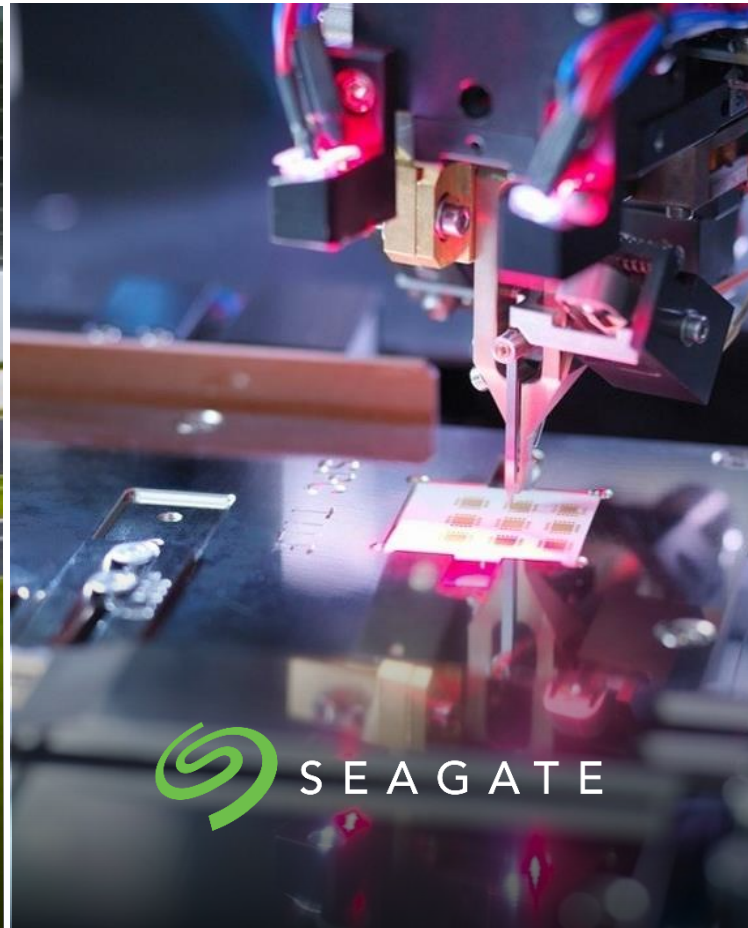
Historical “digital footprints”  
using AI to identify disease



# HPE is making AI Enterprise-grade



Using AI to perfect race strategy

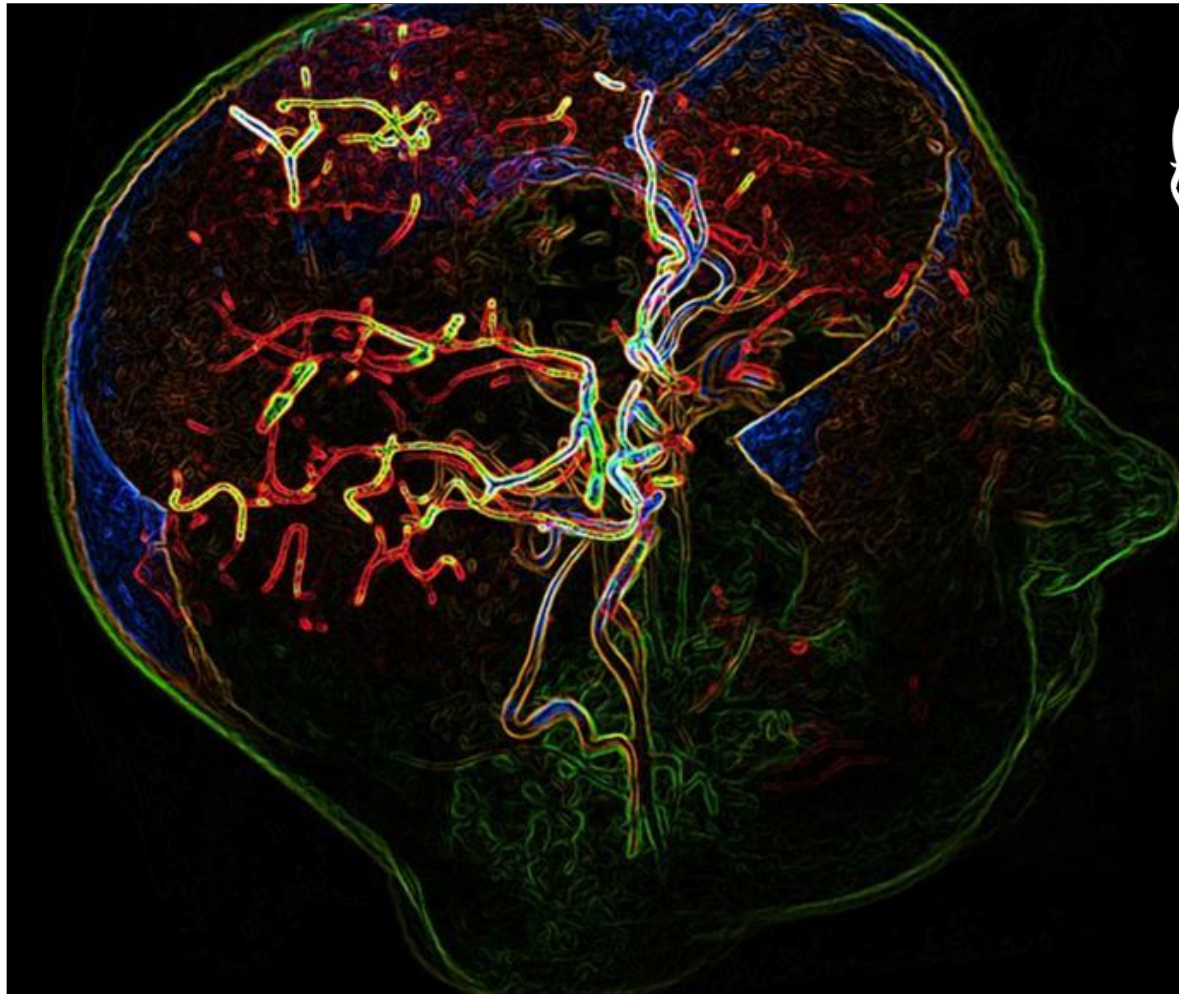


Converging AI, IT and OT to boost output and quality



Accelerating Alzheimer's research  
100x using in-memory analytics

# Memory-Driven Computing helps outpace the global time bomb of neurodegenerative disease



**DZNE**  
Deutsches Zentrum für  
Neurodegenerative Erkrankungen  
in der Helmholtz-Gemeinschaft

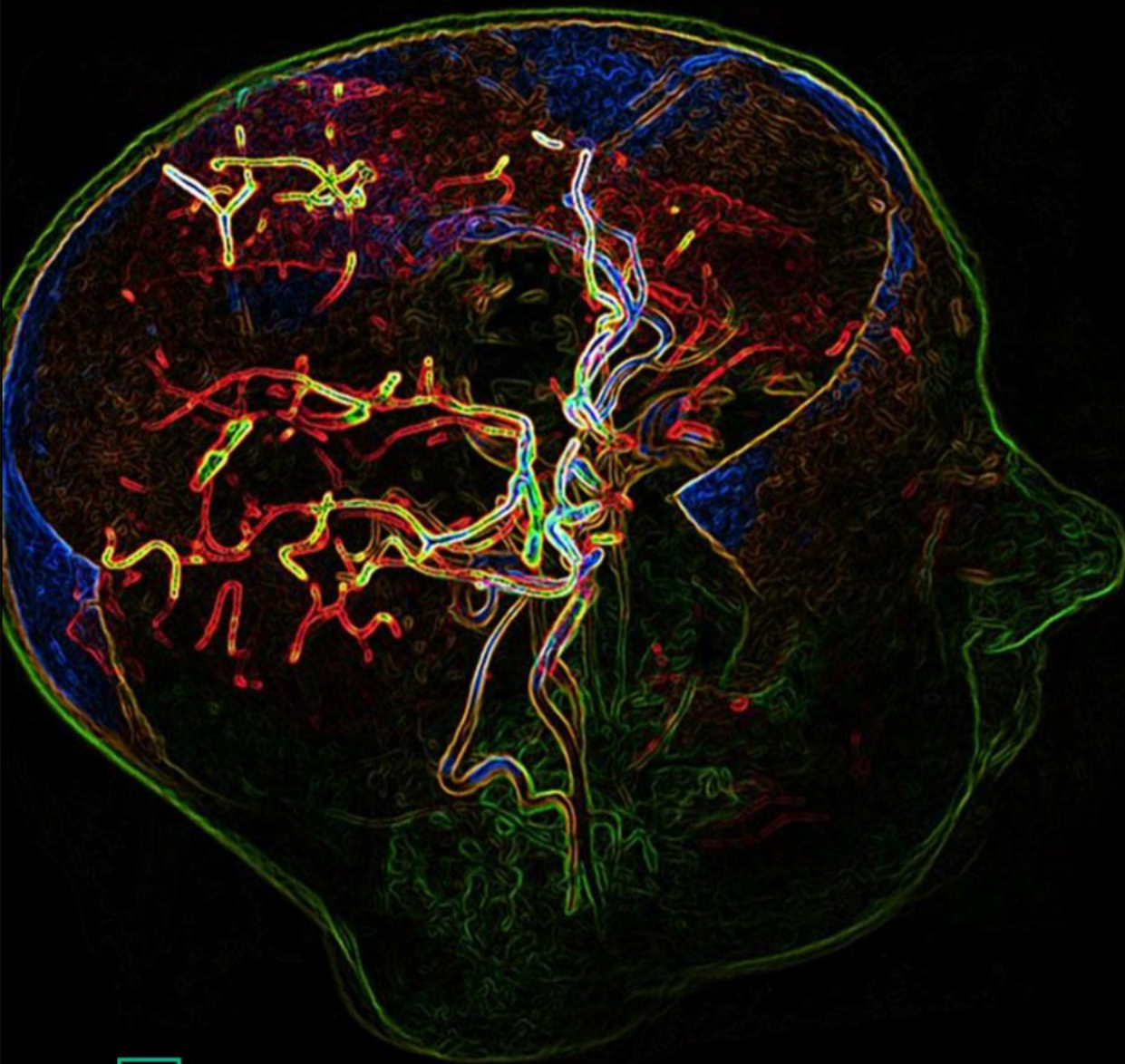
DZNE discovered HPE's Memory-Driven Computing — and saw unprecedented computational speed improvements that hold new promise in the race against Alzheimer's

**60%** power reduction cuts research costs

**101x** increase in analytics speed blasts research bottlenecks, leading to shorter processing time — from 22 minutes to

**13** seconds





**Challenge: Unlocking the secrets to early detection**

Researchers know that the disease processes leading to dementia begin decades before symptoms manifest, but they don't know exactly how.

**Solution: Memory-Driven Computing fulfills vision**

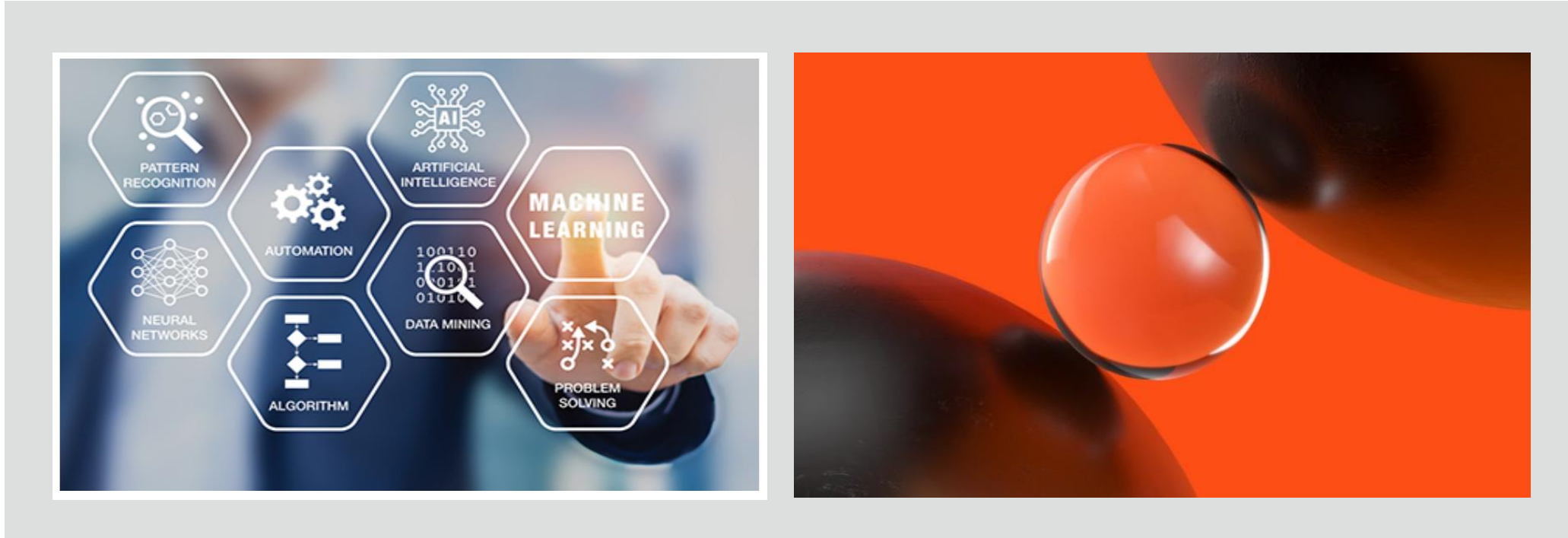
DZNE wanted a way to work with genomic data quickly and in a decentralized way, without losing time transmitting data among collaborators or even among its onsite compute tiers. Memory-Driven Computing from Hewlett Packard Enterprise is providing the solution.

**Results: Computational muscle accelerates research**

DZNE has seen a 22 minute process drop to 13 seconds. That's more than a 100x speed improvement after just a few weeks of work!



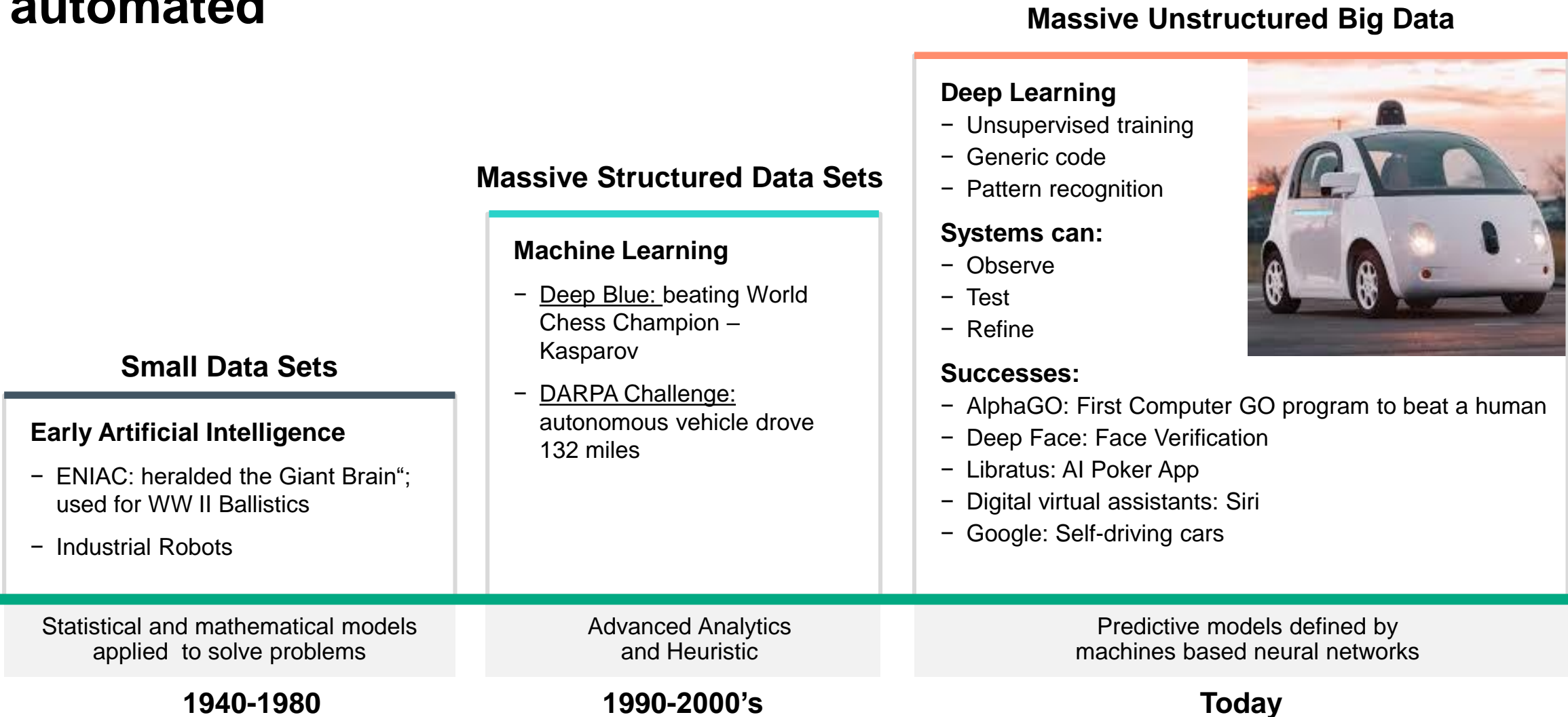
# The circular relationship between AI and data



The heart of what makes AI work is good data—the right data, in the right place, with the right properties you can use to train a model

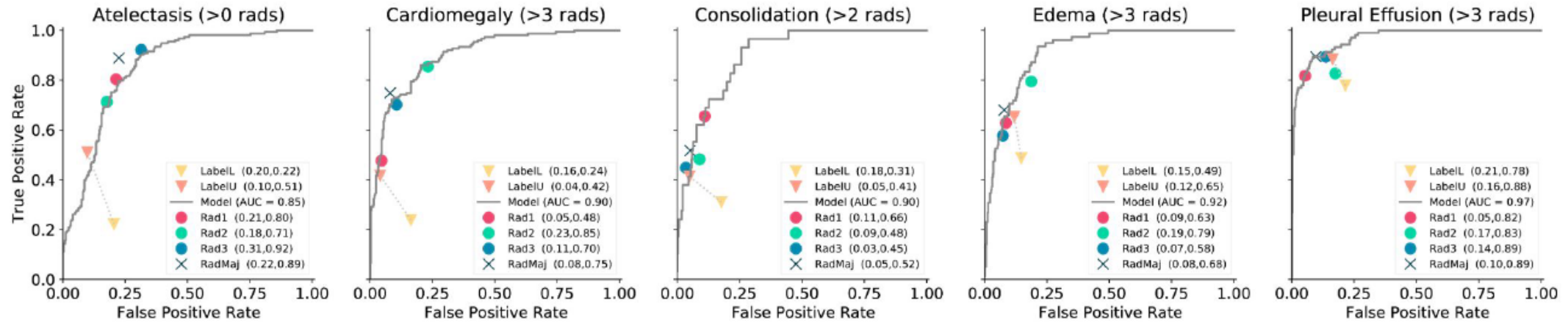


# Deep learning has evolved to become predictive and automated



# Deep learning in medicine: The bigger the dataset, the better the model?

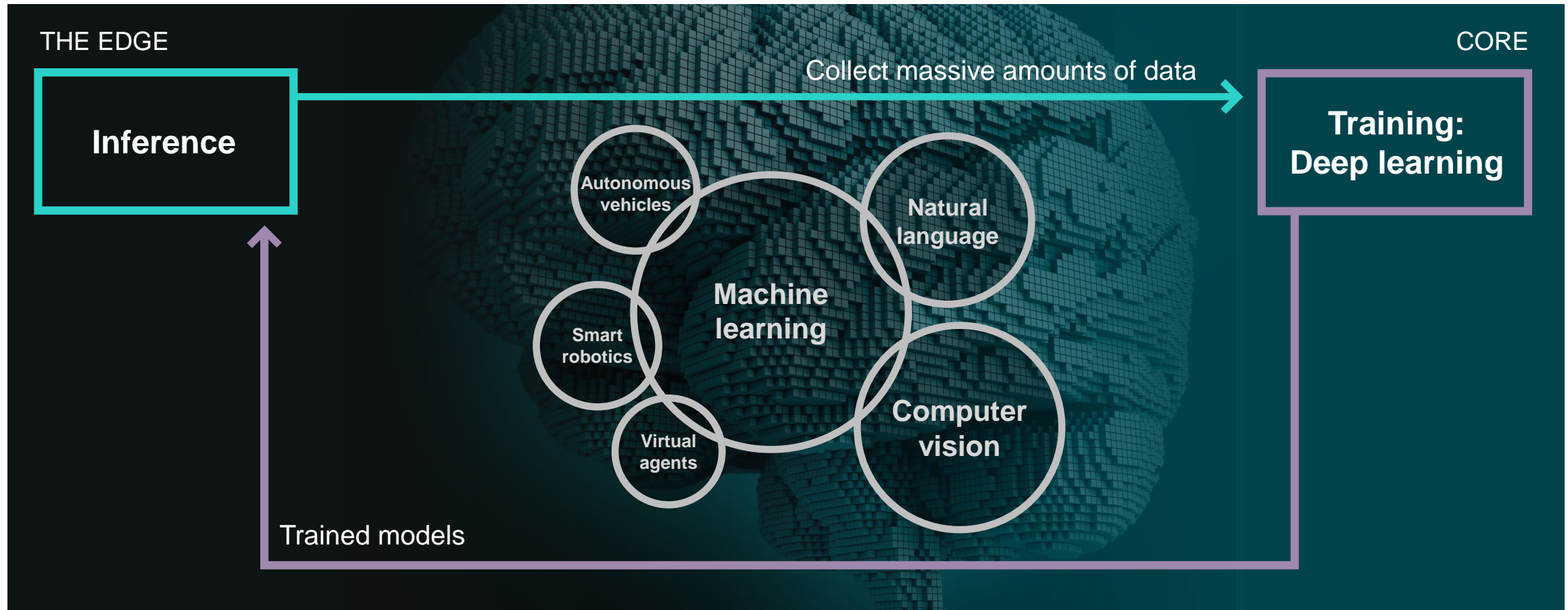
► >600k chest x-rays have been published to boost model performance, but dataset issues remain.



- Deep learning models for imaging diagnostics fit datasets well, but they have difficulties generalising to new data distributions. Despite improved documentation to this new dataset, label definitions are shallow.
- There are challenges with extracting labels using NLP from doctors notes: Its error-prone and suffers from the lack of information contained in radiology reports, with 5-15% error rates in most label categories.
- Significant number of repeat scans, with 70% of the scans coming from 30% of the patients. This reduces the effective size of the dataset and its diversity, which will impact the generalisability of trained models.



# HPE's technical focus areas within AI



- **Deep learning** because of massive compute power and data mass
- **Prediction** from huge amounts of data

- Machine learning **inside applications**
- Inference at the **edge**
- Building of, and simulations on, **digital twins**
- **Building AI into our products** for better management and support



**Thank you**