

The Impact of Artificial Intelligence on Storage and IT

Live Webcast April 1, 2020 10:00 am PT











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50,000 IT end users & storage pros worldwide



What

We

Educate vendors and users on cloud storage, data services and orchestration



Support & promote

business models and architectures: OpenStack, Software Defined Storage, Kubernetes, Object Storage



Understand Hyperscaler requirements Incorporate them into standards and programs



Collaborate with other industry associations





- What is Intelligence, Artificial Intelligence and Machine Learning?
- The anatomy of an AI / Analytics Solution
- Typical Storage profiles in the data pipeline

What is intelligence?



Intelligence is a person's mental capability to perceive, reason, act, learn quickly, and solve problems (among other things)



MANIPULATE, SENSE, AND MOVE OBJECTS

What is Artificial Intelligence?

Definition

- The ability of computer systems to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages
- Example
 - Turing Test: Inability to distinguish computer responses from human responses



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- Al has been around for more than 50 years
- The term AI was introduced in 1956 by John McCarthy, an American computer scientist
- The growth and adoption of Machine Learning and Deep Learning have made AI real

Evolution of Artificial Intelligence



Al Adoption is Accelerating



In a recent McKinsey report...

47% of surveyed business have embedded at least one Al capability. According to Accenture...

of surveyed C-suite executives believe they must deploy AI to grow

KPMG recently reported... 500% of surveyed business will deploy AI at scale in 3 vears

84

2 types of AI customers. <u>WILL</u> adopt AI. <u>HAVE</u> adopted AI.

KPMG https://advisory.kpmg.us/content/dam/advisory/en/pdfs/2019/8-ait-trends-transforming-the-enterprise.pdf McKinsey as reported in Feb, 2019 WSJ https://blogs.wsj.com/cio/2019/02/08/the-current-state-of-ai-adoption/ Accenture https://www.accenture.com/us-en/insights/artificial-intelligence/ai-investments

Al Market Opportunity



37% Compound Annual Growth Rate! 2018-2025

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https://www.tractica.com/research/artificial-intelligence-market-forecasts/

Many Approaches to Analytics & Al SNIA CLOUD STORAGE No One size fits all...



Why is Everyone Talking about Al Now?

Actionable data

Enormous amount of data of all types Critical for machines to learn

Algorithms

Availability of New Algorithms, Neural Network Research and Software

Compute power

GPU based computing with super compute power Relatively low cost



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Data Challenge

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Misaligned organizations create data problems



- Separated by org structure
- \mathbf{X}

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Integrating data as it grows Duplicates & mislabeling Disjointed vendor solution Strategic Solution Data transformation errors

a) Move to Shared Data Storage Architecture for AI b) Unify Data Life Cycle and c) Unify End-to-End Data Pipeline



Shared Data Storage Architecture for Al





Source: https://www.upsolver.com/blog/understanding-data-lakes-and-data-lake-platforms

- Shared data lakes can improve Al effectiveness and efficiency
- Shared data lakes service multiple usages
- Shared data lakes help with streaming data - event-based data streams generated continuously

Unify Your Data Strategy for Al Deployments





Set up a unified corporate data framework to reduce data silos



Ingest streaming data from drones using a software tool running on the CPU



Store data in highperformance storage solutions to enable efficient data access for all systems



Clean data with popular software tools optimized for the CPU





Event Streams Simplify Data Pipelines

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DATA PIPELINE OPTIMIZATION

Capture Your Data At or Near the Source
Filter for Specific Event Information
Take any immediate actions necessary
Aggregate By Time Interval
Join with Other Data Sources

Analyze with AI/ML, and Analytics Tools







Training Model







New Use Cases & Workloads Are Changing "Storage"



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Capacity





- Al is more than just training models!
- Data is no longer single purpose, but purpose+
- We need to simplify and unify data treatment
- Move to Shared Data Storage Architecture
- Unify Data Life Cycle
- Unify End-to-End Data Pipeline
- Pipelines are the new SAN

Additional Resources



- Presentation: Customer Support through Natural Language Processing and Machine Learning https://youtu.be/u1iRvWzMioM
- Presentation: Introducing the AI/ML and Genomics Workloads from the SPEC Storage Subcommittee https://youtu.be/47pmgFXYi-4
- White Paper: Is Your Storage Ready for AI? <u>https://www.intel.com/content/www/us/en/products/docs/storage/are-you-ready-for-ai-tech-brief.html</u>
- Article: Want optimized AI? Rethink your storage infrastructure and data pipeline

https://venturebeat.com/2020/01/16/want-optimized-ai-rethink-yourstorage-infrastructure-and-data-pipeline/



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