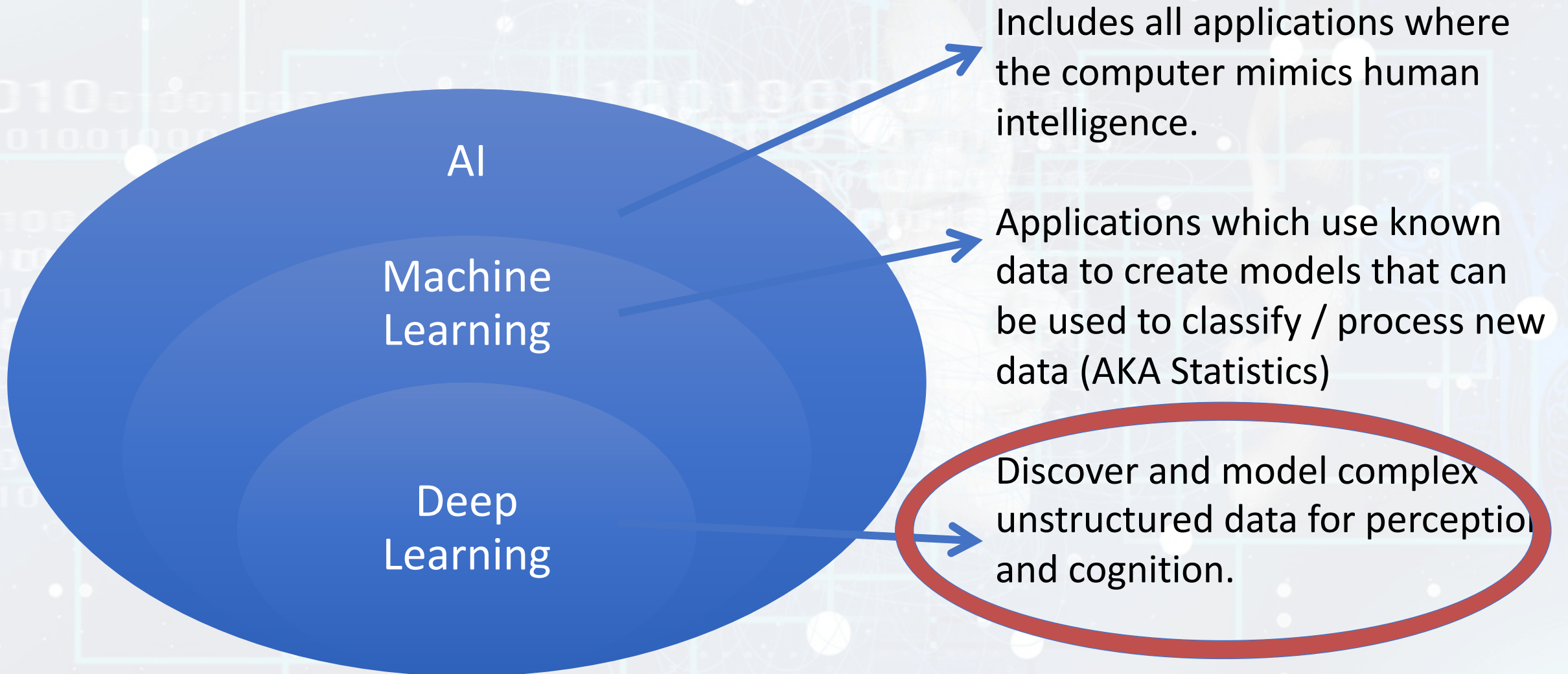


# AI Market Dynamics

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June 24, 2021



# Let's Define the Space





# Deep Learning

- A completely new way to program computers,
- Don't tell them how to compute, let them find patterns in data
- Deep Neural Networks have a myriad of forms (DNN, CNN, RNN, ...)
  - All take trillions of billions of calculations, hence accelerators.
- Fastest growing areas today:
  - Natural Language Processing and understanding
  - Recommendation Engines (done on Xeon's today)

# Compute Accelerator Market Dynamics

- We expect DC accelerators (\$41B) will split 80/20 for GPU/ASICs.
  - Software ecosystem
  - AI and other capabilities make more GPUs a more fungible cloud resource
  - GPU will lose share over time to ASICs
- We expect the Edge accelerators, however, to split 80/20 for ASICs over GPUs
  - Specific app centric
  - Lower power
  - Lower cost
  - Low latency

20 · The Re-Invention of the Data Center

## sizing the opportunity

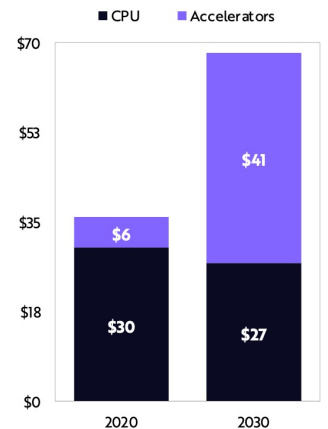
### ARK Believes That Server Processors Will Transform In The Next Decade.

- ARM and RISC-V are likely to displace Intel's x86 in the cloud. Together they could grow 45% per year to reach \$19 billion in CPU revenue and \$100 billion in server revenue by 2030.
- We believe accelerators, dominated by GPUs, will become the dominant processor in the data center, growing 21% at an annual rate to \$41 billion.

Data Center CPU Revenue



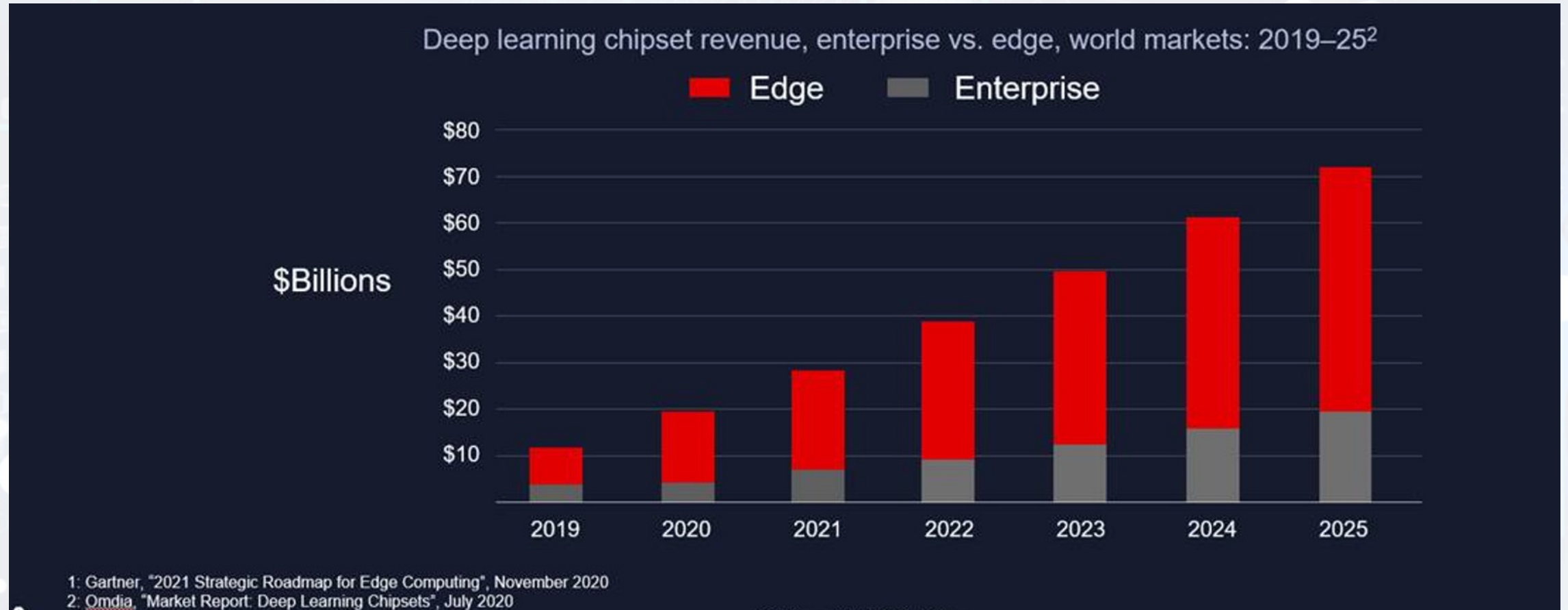
Data Center Accelerator Revenue



Forecasts are inherently limited and cannot be relied upon.  
For informational purposes only and should not be considered investment advice, or a recommendation to buy, sell or hold any particular security.  
Source: ARK Investment Management LLC, 2020 based on data sourced from company quarterly filings by Nvidia, Intel, AMD, and others.



# Market size could reach \$71B in 2025



# Where do we expect AI innovation?

- Two approaches for **Extremely Large Models**
  - Brute force and problem simplification
- AI will increasingly be used to **design** and optimize AI chips.
- **Edge AI** Scramble:
  - Move to SoCs for high-value edge computing and control, commodities below
- **Technology** advancements:
  - Analog in-memory computing, especially at the edge
  - Increased fast memory capacity (see IBM STT-MRAM, for example.)
  - Quantum for AI is really hard, but will eventually be transformative



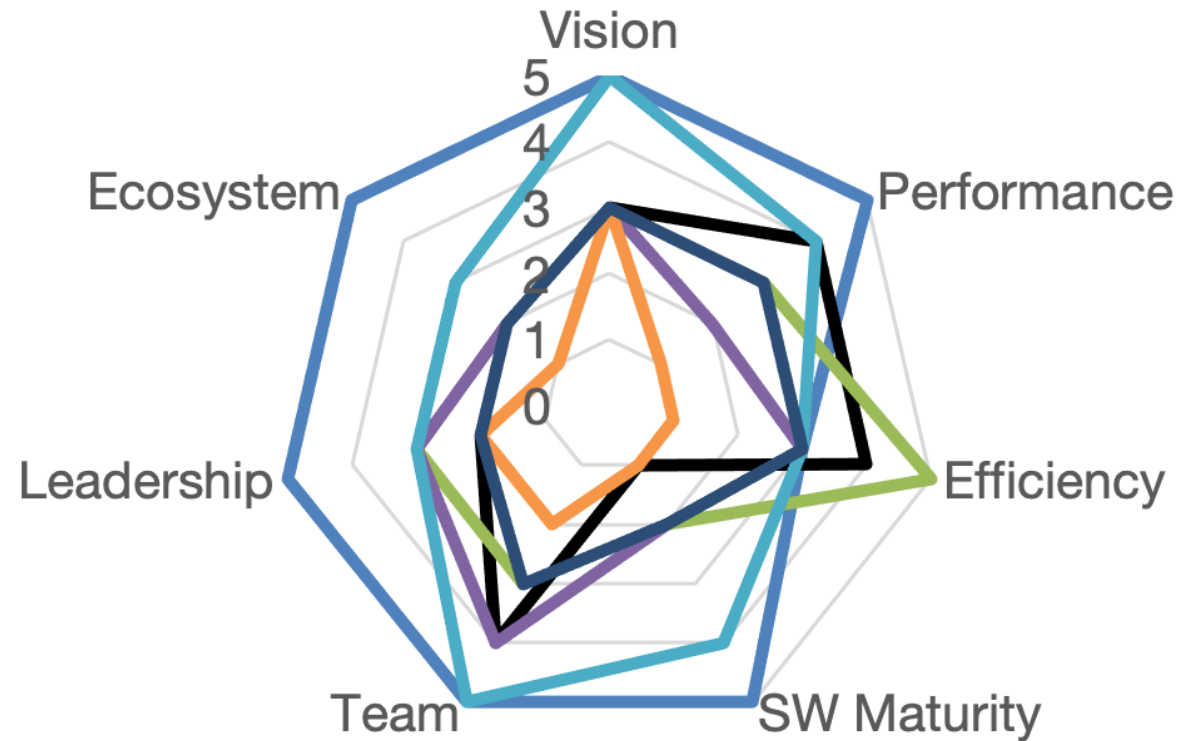
# The Competitive Landscape, imho

For more details, see: <https://cambrian-ai.com/downloads/q2-2021-competitive-landscape-report-cambrian-ai-research/>

- Data Center AI:
  - NVIDIA will be extremely difficult to displace
    - ~5-year head start
    - Leadership HW, SW, and massive ecosystem
  - Cerebras, Google, Graphcore, Intel and Tenstorrent will each carve out a footprint
  - Qualcomm has deep expertise and power efficiency (Cloud Edge)
  - AMD is very late to the party, but has won 2 Exascale S.C. deals
  - China is moving up quickly (Baidu, Alibaba, Huawei)
- Edge AI:
  - The Market is Nascent
  - Some startups have platforms, most have PowerPoint and lots of \$\$\$.

# Public Data Center AI

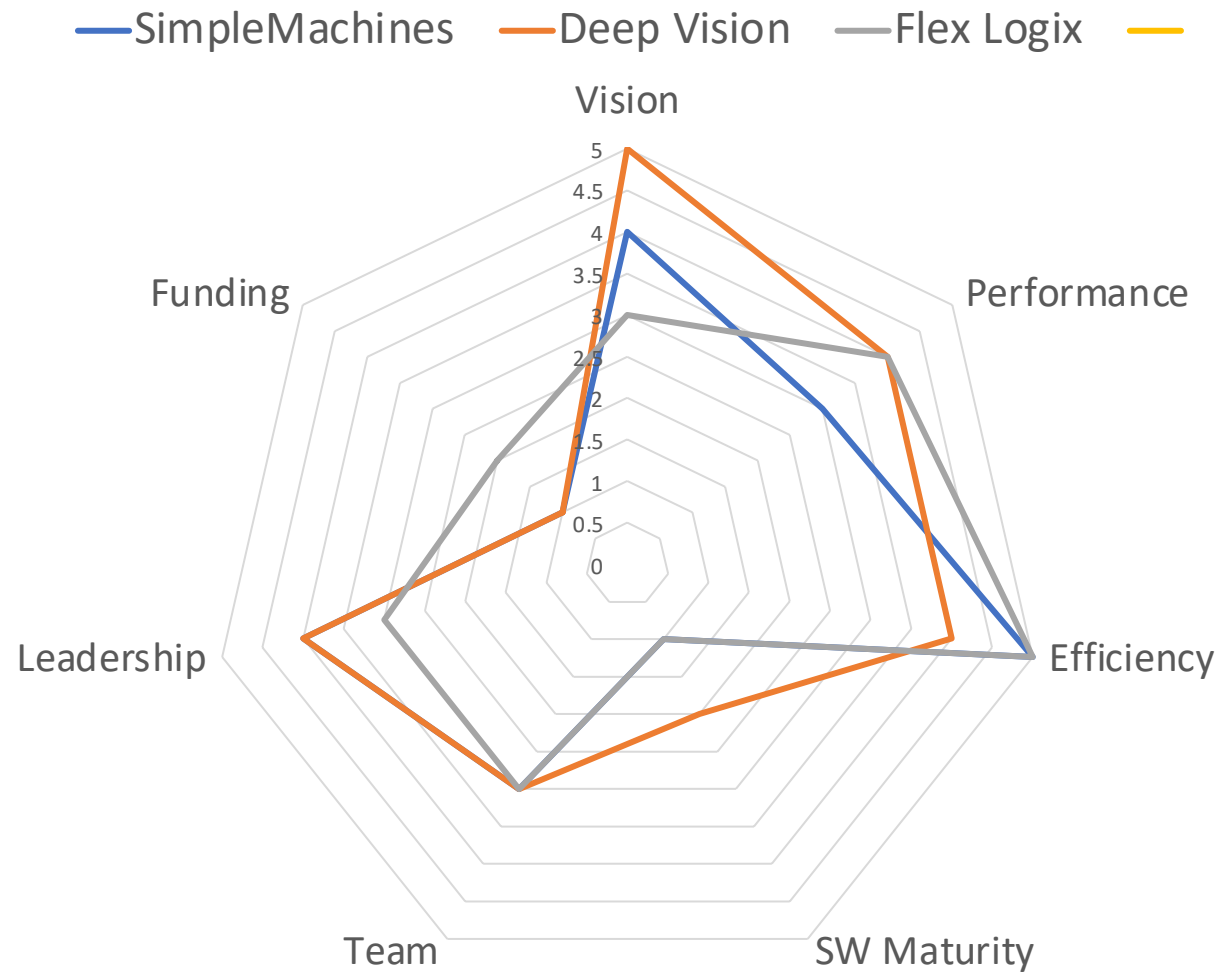
— NVIDIA      — Intel/Habana      — Qualcomm      — AWS  
— Google      — AMD      — Baidu



From the 2<sup>nd</sup> Quarter Competitive Landscape Report, [www.cambrian-ai.com](http://www.cambrian-ai.com)

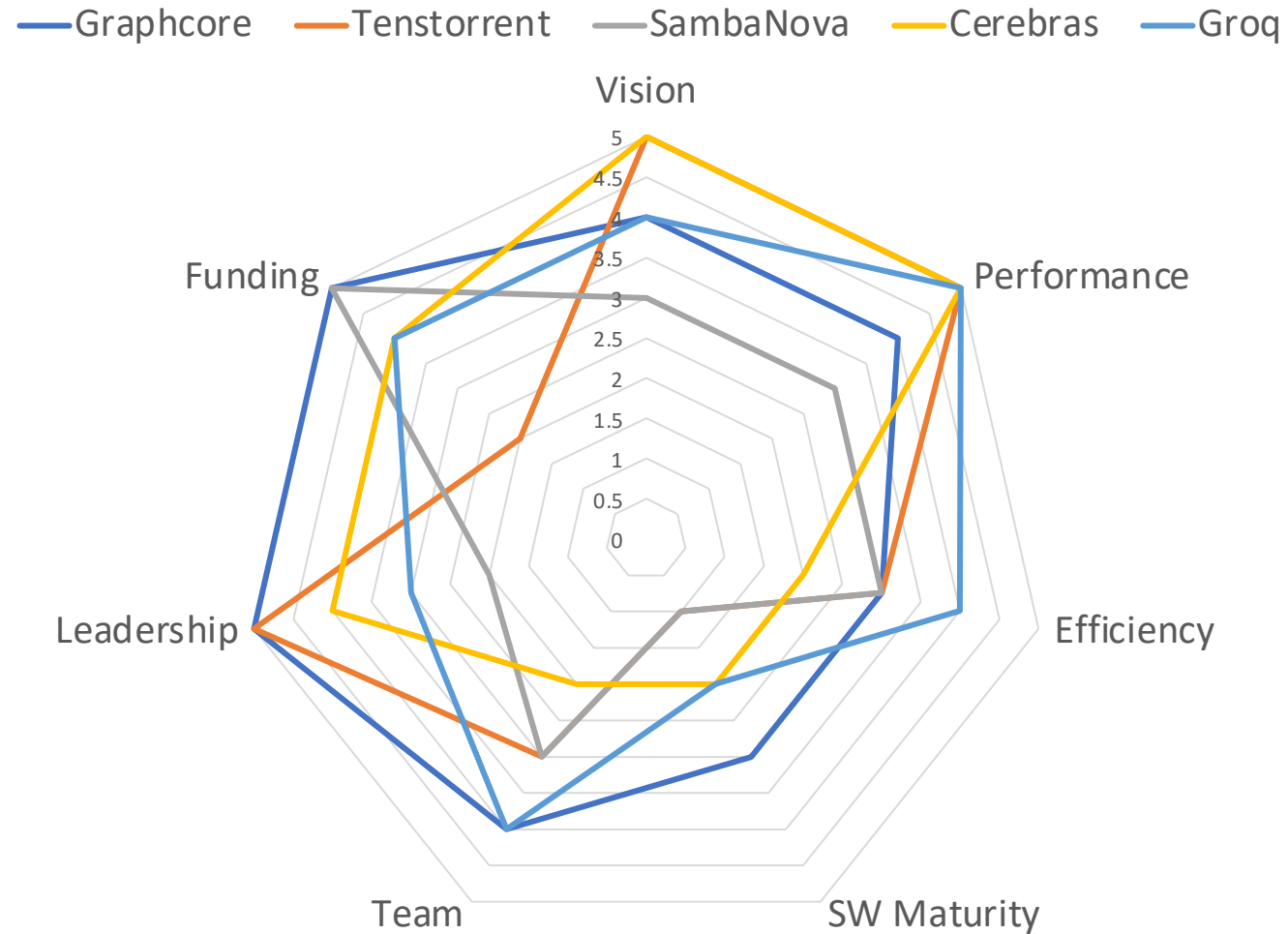


# Startups Edge AI



From the 2<sup>nd</sup> Quarter Competitive Landscape Report, [www.cambrian-ai.com](http://www.cambrian-ai.com)

# Startups: Data Center AI



From the 2<sup>nd</sup> Quarter Competitive Landscape Report, [www.cambrian-ai.com](http://www.cambrian-ai.com)



## Meet our family of Trilobites from the Cambrian Explosion!



Hello, I'm Cam!



Hi! I'm Brian!



And, I'm Devon!

# Thank you!

For More Details, see my **free** report, <https://cambrian-ai.com/downloads/q2-2021-competitive-landscape-report-cambrian-ai-research/>

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