# A Scalable Processing-in-Memory Accelerator for Parallel Graph Processing

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# Large-Scale Graph Processing

- Large graphs are everywhere

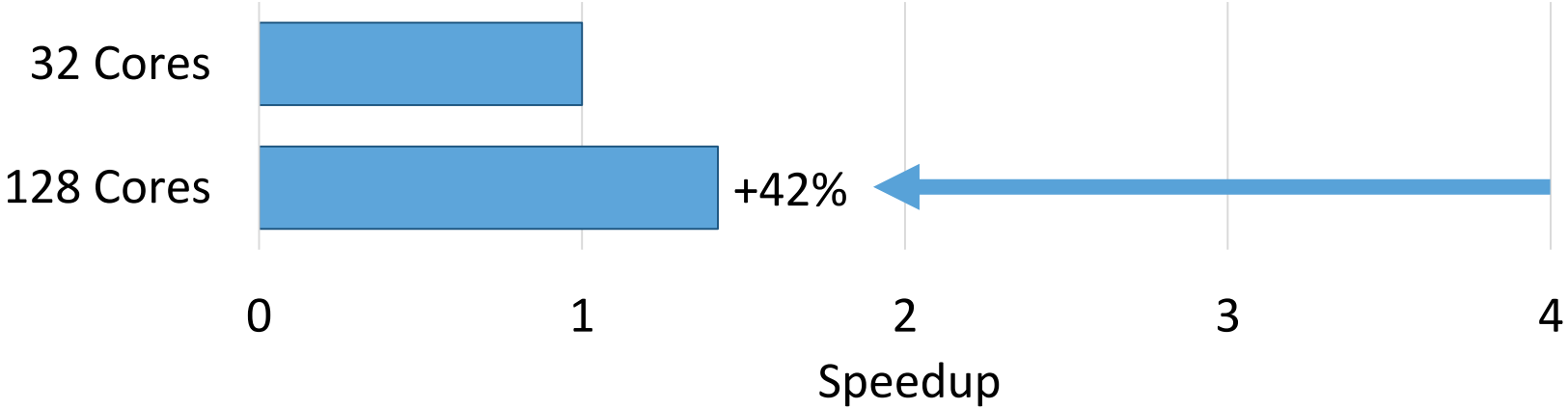
36 Million
Wikipedia Pages


1.4 Billion
Facebook Users

300 Million
Twitter Users

30 Billion
Instagram Photos

- Scalable large-scale graph processing is challenging



# Tesseract

- Tesseract: processing-in-memory for graph processing
  - 3D-stacked DRAM with specialized in-order cores
  - Latency-tolerant programming model
  - Two prefetchers specialized for graph processing

- Evaluation highlight
  - 14x speedup and 87% energy reduction over traditional high-performance servers
  - *Memory-capacity-proportional performance*:
    8GB → 128GB (16x) main memory achieves 13x speedup

Session 3A: Accelerators I (14:15~14:40)