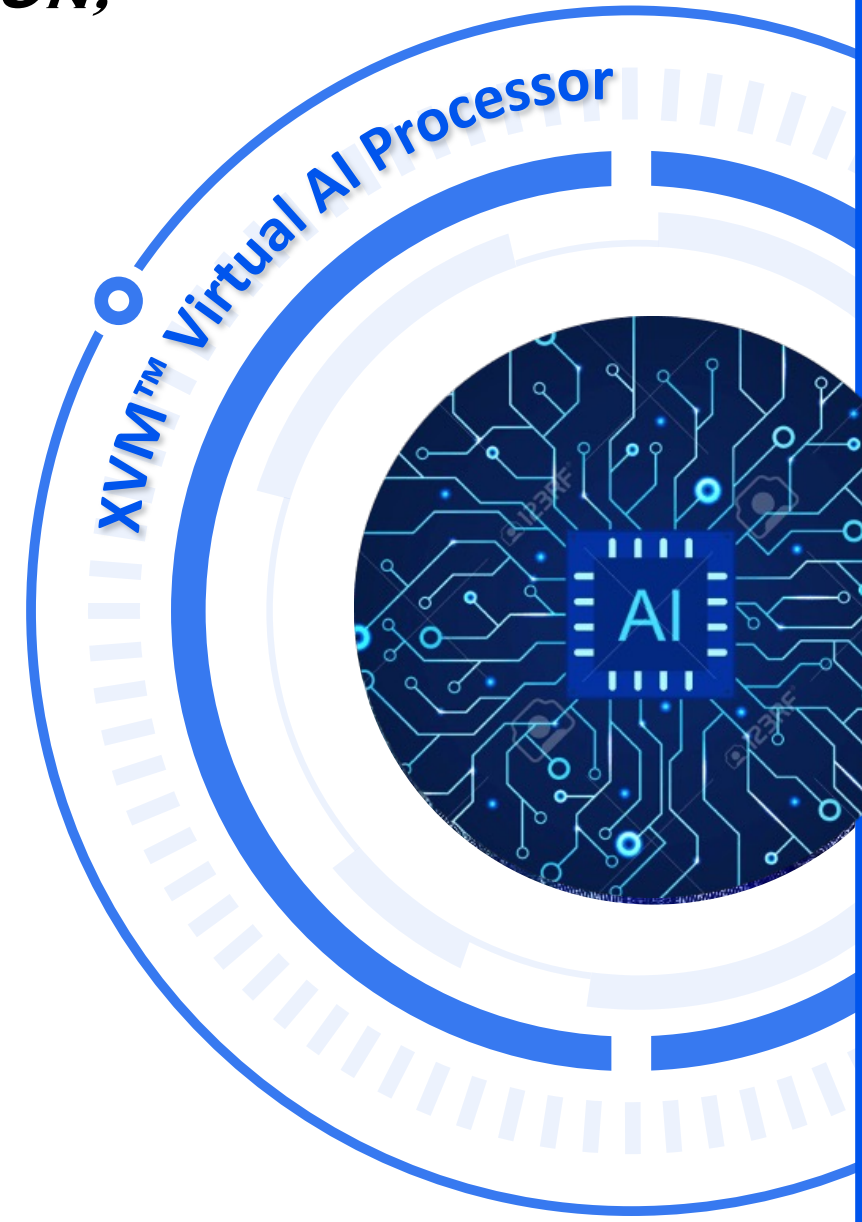
HPC USER FORUM PRESENTATION,

RESTON, 2024



Permion

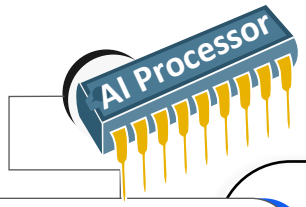
Trustworthy, Secure, Scalable AI

Decisions and Predictions at the Speeds of Relevance at the Edge or in the Cloud

Arun Majumdar, CEO

Permion Company

Decisions and Predictions at Speeds of Relevance from Edge to Cloud



Virtual AI Processor

A US-built Virtual AI Processor, On-Premise or In-Cloud, Performance Increase, Reduce Costs, and Mitigate Risks to AI use: Zero-Hallucination, Interoperable, Trustworthy, Neural and Graph AI/ML.

Company

- Founded 2018
- 150,000 Developer hours
- US team & AI technology

Innovations

- Trustworthy AI
- Works with Legacy and 3rd Party
- SDK, Python, Java, C++, APIs

Credibility

- US Government Contracts
- Leidos Inc .partner for DoD
- IC/DoD Past Performance

Offering

- AI Apps on-site or cloud
- AI Tools and SDK
- Experienced Team

It's not the size of the dog in the fight, it's the size of the fight in the dog - **Eisenhower**

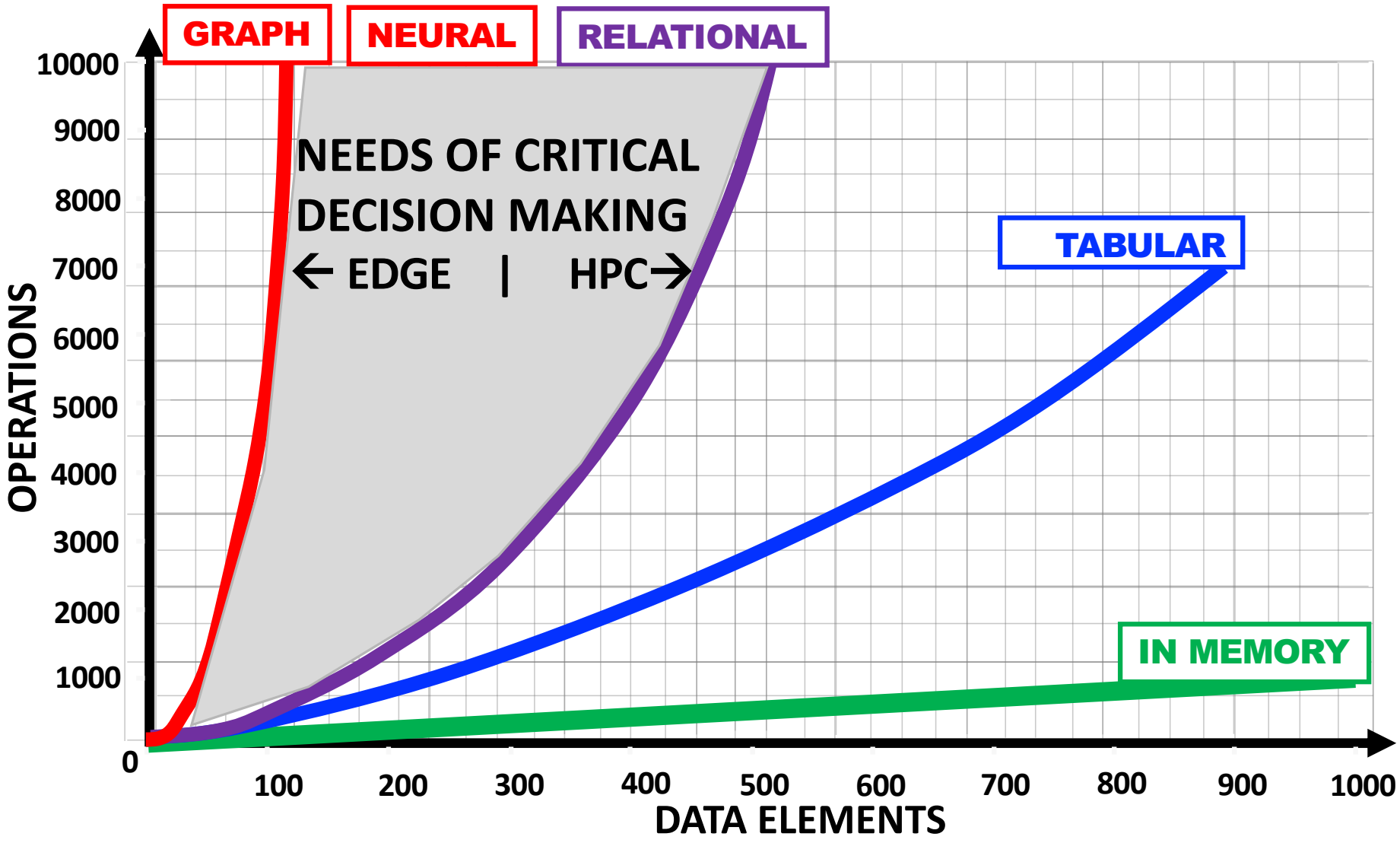
Our Mission is to Create the Foundations for Technological Superiority

To Ignite the Innovations of Tomorrow

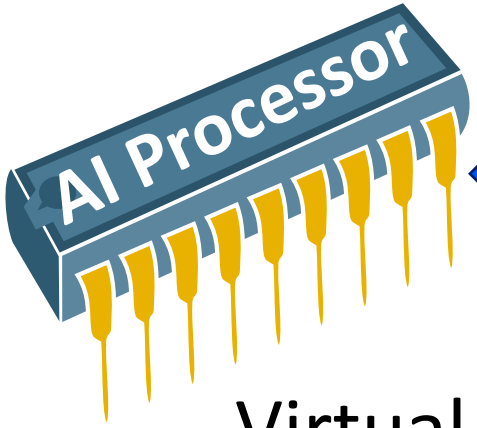
Permion

Representative Relative Problem Complexity for AI Algorithms

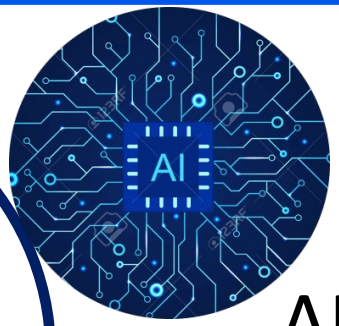
Performance of Processing Complexity



Virtual AI Processor



Non-Von Neumann
Instruction Set
Architecture
Designed for Edge & HPC
Artificial Intelligence



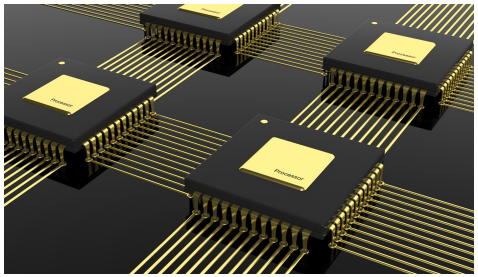
AI Designs

Neural, Graph, Symbolic, Hybrid Designs

Virtual Processor

Cloud, Laptop, HPC Supercomputer, Edge, IoT, nano

CPU, DPU, TPU, GPU, Analog, Photonic, Quantum, Hybrid



Physical Hardware

Software Defined Compute – Data Oriented Design – Software Defined Hardware

Virtual AI Processor – Design Philosophy for Edge-to-HPC

X-Machines Theory, Data Oriented Computing (DoC)

1. **Single target code generation – AI Virtual Instruction Set Architecture (ISA)**
   - Instruction Set Architecture based on X-Machine Theory (“Category Theory”)
   - CPU, GPU, TPU, DPU, RISC-V, … future hardware

2. **Portable binaries and mobile AI computation – process data at its origin**
   - LLVM and Intermediate Assembler – JIT Compilation
   - C++14 Micro-architecture Implementation (for legacy compatibility)

3. **Support for diverse compiled languages – Software and Hardware for AI**
   - Verilog, VHDL, direct to silicon (FPGA) & ASICs
   - Graph (OpenCypher, GraphQL, …) & future Quantum Languages

4. **Interactive tradeoffs in compute – fine grain control of AI computing models**
   - Data Plane & Execution Plane Interaction – can reshape computations
   - Control Plane meta-control (i.e., code as data and data as code)

5. **An open and extensible modular AI foundation - For more complex systems**

Permion AI Platform

Interoperates and works on-premise and in cloud, from Legacy to all current third-party systems, and ready for future hardware

- US built Neuro-Symbolic ISA as Virtual AI Processor
- High Fidelity explainable reasoning Edge to Cloud
- Industrial-scale AI/ML (Low Latency) Performance
- Can run on legacy, existing, and emerging platforms
- Large Graph Models, Large Language Models
- ISO Standards Compliant (ISO 24707, ISO 13211)
- Advanced Graph Generative AI
- Cheaper, Faster, Better, Scalable, Affordable

Trustworthy: explainable, meaningful, explanation accuracy, and knowledge limits

Contacts

Address

8000 Towers Crescent,
Suite 1350, Vienna, VA
22182 (Tyson's Corner)

Email Addresses

arun@permion.ai
jgavrilis@permion.ai

Cell-Phones

Arun M : (571) 344-0521
Jim. G : (910) 922-9261