Atomic State Computing

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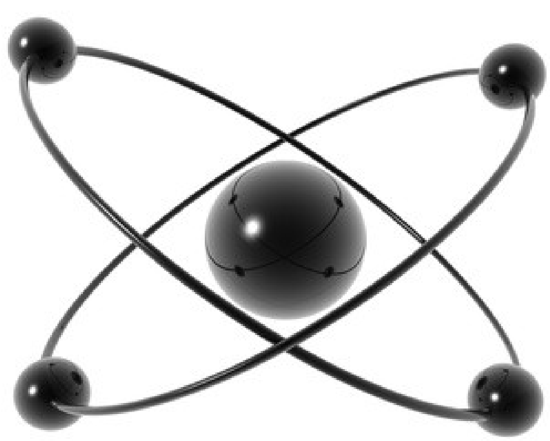
Introduction

Current computing architectures have reached a critical juncture, where the energy required to execute computational tasks in Generative Prediction models utilizing Large Language Models (LLMs) or Quantum Theory designs has escalated to astronomical levels. This whitepaper proposes 'Atomic State Computing' as an innovative alternative that significantly reduces the energy consumption for complex tasks. Atomic State Computing evaluates all possible influences on the current state of an atom, transitioning the nucleus to what was previously an electron's state. Multiple atoms can be computed simultaneously, with their interrelationships weighted accordingly. When simplified to a single atomic state, the concept can be expressed as follows: 'Atomic State = Atomic Potential States + Nucleus'. The nucleus being the current state, it's value is known, so we first need to calculate the Atomic Potential States, we can do that with the following:

Atomic Potential States

$$Aps = (x^{y^\circ})^{(x^{y^\circ})} - b$$



Visual representation where **y** = 2

Calculations

To calculate the **As** 'Atomic State', we need to know the values of **Aps** & **n.** As **n** is the current state, we alredy know it's value, we know how calculate the **Aps** with the above calculation, we can now equate the **As** with the following:

$$\mathcal{As} = \mathcal{Aps} + n$$

Giving you the **full Atomic State**

Variations of the calculation:
As=Aps+n or **n=As-Aps** or **Aps=As-n**

symbols	**Explanation**
As	Atomic State
Aps	Every possible quantafiable 'next' state of knowledge
n	The nucleus, current knowledge state
yo	Codeable points on the x & y axis of the sphere, note: (y=sphereXaxis=sphereYaxis)
b	Bias, 'quatifiable traits, defined by the user'
x	Code, Programmed quantifiable data

Calculation Assumptions

In this model, the nucleus **n** represents the current state, with possible future states **Aps** Atomic potential calculated using three-dimensional mathematics to create a spherical map of all potential outcomes, expressed as **x** to the power **y degrees,** to the power **(x** to the power **y degrees**. Bias can have varying degrees of impact and will evolve as the system learns. This bias allows for the inclusion of quantifiable traits such as belief systems, religion, timelines, physical and chemical properties, colors, sounds, associations, and correlations. These traits are limited only by the imagination of the user, the computer, or the specific use case and will help do narrow down the potential outcomes.

Computational Advantage

The computational advantage of Atomic State Computing is exponential from the outset, as the available options expand beyond binary 0s and 1s to a predefined, virtually limitless number raised to the power of itself, defined by the **y** value. This exponential growth is compounded through each process. In this context, **x** in the equation represents data stored for manipulation, or code which can be customized to allow for exponential possibilities within a single process.

By setting realistic boundaries defined by natural constraints, we can avoid the excessive computational power consumption characteristic of quantum computing, thereby eliminating fictional sub-states. The adoption of Atomic State Computing necessitates the development of new programming languages, as existing codebases will become obsolete.

Future Hardware Designs

Future hardware designs should leverage the advancements in atomic computations, potentially integrating or enhancing neuromorphic, analog, photonic, or spectrum computing to achieve maximal computational power at a fraction of the cost. This innovation could enable devices to operate for years on a single charge, with batteries lasting beyond human generations. Customizing both hardware and software will significantly reduce the computational power required, facilitating the development of low-power, long-life devices, as well as high-powered devices capable of mimicking natural or human-like computational processes.

Notes:

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Credit & thank you to **Sergey Tokarev** for the stunning visual on page 1.

"Moving to an infinite number of possibilities, from only two, is a massive leap."
bdc

Where **As, n, b** & **Aps** are used in calculations on this white paper, all future representations are to use these symbols:

Scribblings are my own ;-}

$$\mathcal{A}s = \mathcal{A}ps + n \qquad Aps = (x^{y^{\circ}})^{(x^{y^{\circ}})} - b$$