

Roscoe C. Ferguson Unveils Groundbreaking Programming Theory That Could Reshape AI and Software Development

SUGAR LAND, TX, UNITED STATES, October 2, 2025 /EINPresswire.com/ -- Roscoe C. Ferguson, a veteran software and electrical engineer and NASA contractor, has introduced a revolutionary programming paradigm known as Network Logic Programming Theory (NLPT), poised to transform how logic is structured, executed, and integrated with artificial intelligence. With over

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Roscoe C. Ferguson

30 years of experience in safety-critical systems for aerospace and commercial applications, Ferguson is no stranger to innovation. His latest work reimagines programming by abstracting logic as relationships and their derivatives, offering a scalable, transparent, and adaptive alternative to traditional procedural and object-oriented models. NLPT is a modern data processing system that separates complex algorithms into two parts: network logic and traditional computations. This approach uses networks to store and process the logical relationships required for making decisions, while simple,

fast algorithms on a conventional CPU handle the computations. This design, which can be seen as an evolution of programming, is intended to help manage and understand the complexity of software systems.

“Software complexity is growing exponentially,” says Ferguson. “We need a new way to think about logic—one that aligns with the advancement of artificial intelligence and how they process relationships.”

The principles of traditional programming are derived from performing computations (mostly mathematical). Logic is abstracted from concepts that use instructions and control flow (e.g., loops, conditionals) to tell the computer how to do something step by step (linear or procedural execution). Overtime, complexity was added to solve bigger problems which resulted in systems where logic and computation are tightly coupled in the same code. Changing logic often means rewriting algorithms and as systems grow, complexity explodes because every new feature adds more code paths. While costly to maintain, this style provides determinism where logic decisions can be quantified.

With the rise of artificial intelligence (AI), logic is learned from data by extracting the relationships between items or concepts. This approach reduces the cost of developing systems on one hand, but results in a reduction in determinism on the other as a key basis of AI is probability. One of the biggest ironies is that a popular use of AI is to generate traditional style programs intended to execute on traditional processors. Industry likes the capability of AI but still trusts the determinism of traditional programmed systems. Why not evolve the benefits of traditional programming to better align with AI?

NLPT attempts to bridge this gap where programmed logic is better aligned with AI and at the same time evolved to reduce cost by managing complexity using a more suitable form of abstraction. Traditional programming is based on the concept of the Central Processing Unit (CPU) which is great at performing computations. Complexity can be modeled as a collection of relationships in the form of networks which has been proven to be best analyzed and understood using Network Science (graph techniques). NLPT takes advantage of both worlds combining computation with relationship processing in tandem to solve programming problems. In NLPT complexity is migrated from traditional programming techniques, reducing them to simple algorithms and moved to a relationship form of abstraction stored in networks. The basis is decisions are made by networks and computations are made by traditional CPU style algorithms. The conventional CPU is reserved for its core purpose: performing simple, fast computations on data, whereas the bulk of complexity can be understood via the analysis of networks using Network Science. NLPT uses relationships in a network as the primary abstraction. Logic is stored as connections, and computation flows through these relationships. With NLPT complexity is managed by network structure. Adding new logic often means adding new nodes/edges, not rewriting large code blocks. Networks act as a new form of assembly language, storing both static and dynamic logic paths.

This new paradigm better aligns with AI as the crux of complexity is modeled using relationship-based abstraction where both the structure and dynamics of core logic are modeled as relationships. AI systems are based on understanding and processing relationships, and this approach allows better interaction between traditional programming and AI. In this sense, AI can be used to capture relationships to be applied by NLPT in a deterministic and programmed manner. An analogy is that NLPT logic mimics brain-like memory by capturing relationships derived from AI and applying those relationships using network flow. This allows for discovered relationships from AI to be stored and executed without “thinking”. When we learn to ride a bike, we initially struggle. However, what we learn is stored as a memory of relationships and once learned, we can ride a bike without thinking.

NLPT also introduces the concept of the Network Processor—a hardware engine—that serves to an analogy to the Graphics Processing Unit (GPU). It processes networks (graphs) with the ability to process network flow logic based on static logic paths defined in network definitions, generate new logic paths dynamically during runtime using stored relationships, and work in tandem with the traditional CPU to support the hybrid data processing model.

NLPT is a practical framework for evolving how we think about programming in the age of AI and complex systems. If you're working on systems that demand high adaptability, distributed logic, or AI integration, this could be a game-changing approach.

Ferguson is the founder of Intellect Logic Systems, LLC, and holds degrees from the University of Houston's Bauer College of Business and Cullen College of Engineering. His work is protected under U.S. Patent 12,131,160 and detailed in his book and audio book Network Logic Programming Theory. He is also an active industry member of the NSF IUCRC BRAIN Center, contributing to advancements in neurotechnology and trustworthy artificial intelligence.

Roscoe Ferguson
Intellect Logic Systems, LLC
+1 713-554-0684
[email us here](#)

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