Cognizant's AI Lab Announces Breakthrough Research for Fine-Tuning LLMs and Records its 61st U.S. Patent Issuance

TEANECK, N.J., Oct. 28, 2025 /PRNewswire/ -- Cognizant (Nasdaq: CTSH) today announced a breakthrough from its AI Lab that introduces a novel, efficiency-focused method for fine-tuning large language models (LLMs) -- showing significant promise of reducing training costs compared to traditional approaches. At the same time, the lab continues to be recognized for its AI innovations with two newly issued U.S. patents that advance AI decision making and data augmentation.

"We're excited to be continuing to break new ground when it comes to AI innovation and be recognized for it by the US patent office," said Babak Hodjat, Chief AI Officer at Cognizant's AI Lab. "Our latest research, using evolution strategies (ES) for fine-tuning LLMs, has the potential to disrupt the industry. Our approach not only uses less training data than reinforcement learning (RL); it also makes the process more accurate, increasing the quality of work the AI can produce. It's an exciting time for our Lab."

In new groundbreaking research titled "Evolution Strategies at Scale: LLM Fine-Tuning Beyond Reinforcement Learning"(Xin Qiu, Yulu Gan, Conor F. Hayes, Qiyao Liang, Elliot Meyerson, Babak Hodjat, Risto Miikkulainen), Cognizant's AI Lab introduces the first successful use of evolution strategies (ES) to fine-tune LLMs with billions of parameters, marking a transformative new approach beyond traditional reinforcement learning (RL) methods. The net outcome has the potential to increase the effectiveness of training LLMs for a given task while significantly reducing the required training data and associated cost.

Every major LLM must be fine-tuned to become more aligned and useful for the task it is being asked to address, similar to how a student eventually graduates in a particular specialist domain. Reinforcement Learning (RL) is the current preferred method for training LLMs but it is expensive, hard to scale and sometimes the AI learns to "game the system" instead of producing high-quality work. Using evolution strategies – a gradient-free optimization algorithm that directly searches in parameter space – Cognizant's AI Lab was able to overcome the major limitations of RL-based fine-tuning methods. This innovative framework demonstrated improved performance compared to state-of-the-art RL techniques, delivering greater scalability, efficiency, and stability. As LLMs grow increasingly complex, this ES-based fine-tuning approach marks a major leap forward toward more reliable, adaptable, and efficient post-training by simplifying hyperparameter tuning and improving robustness. Since our initial ES fine-tuning code release, we have optimized our codebase and achieved a 10X speed-up, by refactoring the infrastructure with faster vLLM inference engines. The Lab's next step is to scale its method to fine-tune the largest available LLMs across a range of complex tasks.

In addition to this breakthrough, the lab cemented other important innovations, with two new U.S. patents being granted, bringing its U.S. total to 61. The two latest patents highlight key innovations from Cognizant's AI research:

- **U.S. Patent No. 12,424,335** (issued September 23, 2025) covers systems and methods for AI-based optimized decision making for epidemiological modeling. It describes the use of neural networks to predict epidemiological trends, including applications such as COVID-19, by combining separate LSTM models for case and intervention histories into a unified predictor. By enforcing real-world constraints, the approach aims to improve forecast accuracy even with limited data, advancing deep learning applications in public health.
- **U.S. Patent No. 12,406,188** (issued on September 2, 2025) describes a systems and methods for evolved data augmentation and selection, utilizing population-based search to automatically discover and select optimal data augmentation operations. This approach is designed to improve model robustness and performance, even with limited datasets, enhancing the efficiency and reliability of AI across real-world applications.

These innovations, developed by Cognizant's researchers including Dr.Jason Liang, Dr. Elliot Meyerson, Olivier Francon, Dr. Xin Qiu and Professor Risto Miikkulainen, reinforce Cognizant's leadership in pushing the boundaries of AI and machine learning.

"While deep learning can be applied to many real-world domains, its transformative power often comes out only when there are millions of data points to train the models," said Risto Miikkulainen, VP of Research and Professor of Computer Science at UT Austin. "Obtaining such large datasets is often unrealistic. These two innovations enable effective model training with fewer examples, expanding the applicability of deep learning."

About Cognizant
Cognizant (Nasdaq: CTSH) engineers modern businesses. We help our clients modernize technology, reimagine processes and transform experiences so they can stay ahead in our fast-changing world. Together, we're improving everyday life. See how at www.cognizant.com or @cognizant.

About the Cognizant AI Lab
The mission of the Cognizant AI Lab is to maximize human potential with Decision AI, a form of AI that combines generative AI, multi-agent architecture, deep learning, and evolutionary AI to create sophisticated decision-making systems. Decision AI powers Cognizant's Neuro® AI platform, which is utilized by Fortune 500 companies and non-profits to discover new ways to

exceed their goals. The platform enables organizations to rapidly build AI that optimizes decision-making, leading to revenue growth and societal progress.

Led by AI pioneers Babak Hodjat and Risto Miikkulainen, the lab collaborates with institutions, academia, and technology partners to develop groundbreaking AI solutions responsibly. With over 120 patent filings globally (including issued and pending applications), the lab excels at combining scientific innovation with commercial application. It supports Cognizant's goal of improving everyday life, focusing on business and AI-for-good applications.

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