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Scaling and making AI useful at LinkedIn
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Every week, we hear about new AI models setting benchmark records or even winning IMO gold medals. Impressive, yes—but the AI system that really fascinates me is AlphaEvolve.

Why AlphaEvolve?
Because it's not just about solving known problems faster—it's about innovation. It recently invented a new matrix multiplication algorithm that surpasses the best one humans invented over 50 years ago.

But what is innovation, really?
Innovation is the creation of new information—new patterns we haven't seen before.

And what is information?
At a fundamental level, information is the arrangement of matter in space. Think of the astronomical number of ways we could arrange the ~2 × 10^29 particles that make up a human body. Yet only a tiny fraction of these arrangements produce something meaningful—you or me. Nature achieves this through fundamental physical laws to form atoms and molecules and then evolution to assemble molecules into cells, and cells into life.

In this sense, evolution itself is an innovation engine—a process of searching through an unfathomably large configuration space to find meaningful, functional patterns.

Innovation is search + validation. There are two ways to perform such a search:
- Random Search, which requires massive scalability to work. Evolution is a prime example, powered by the second law of thermodynamics. As Schrödinger described, life is a process that reduces local entropy (creating order) by consuming external energy while increasing global entropy through heat dissipation. This random search, happening at every square inch on earth, has shaped life for nearly 4 billion years.
- Guided Search, which is far more efficient. Human intelligence driving science and technology over the last 300 years is the best example of this.

AlphaEvolve demonstrates the power of guided search. Its matrix multiplication algorithm spans a search space of 2^224,000 possibilities (given that the generated Python code is ~28,000 characters or 224K bits). I doubt that any random search algorithm, like genetic algorithms, would have luck finding this solution in our lifetime. AlphaEvolve, on the other hand, is a guided search, backed by intelligence encoded in an LLM makes it possible. LLM is still far from human intelligence, but it's powerful enough to open doors to new kinds of innovation.

What does this mean for AI engineers?
Building AI models is itself an innovation challenge: discovering better architectures, configurations, or hyperparameters. We can apply the same two principles:
- Faster Iteration – Scale your search to test many ideas quickly.
- Better Intuition – Guide your search with insight and strategy to reach the target faster.

The pace of development depends on both. With neither, we need to bet the progress on luck. With both, breakthroughs become inevitable.