

Quantum Algorithm Developed for Financial Services Sector Successfully Builds High-Return, Low-Risk Portfolios

Multiverse Computing, Protiviti and Ally Financial study shows that financial managers can use current quantum annealers to solve practical problems today

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/EINPresswire.com/ -- Researchers from

[Multiverse Computing](#), a global leader in delivering value-based quantum computing solutions, and Protiviti, a global consulting firm, working with Ally Financial, an industry leader in digital financial services, have released a study demonstrating how a new algorithm run on a quantum annealing system (a technology for finding optimal solutions) can optimize investment portfolios automatically with returns that match traditional portfolios.



The joint team of quantum computing engineers and financial analysts developed a hybrid quantum-classical approach to financial index tracking portfolios that maximizes returns and minimizes risk. The paper about the study, titled, “Financial Index Tracking via Quantum Computing with Cardinality Constraints” can be found [here](#).

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Sathish Muthukrishnan, Chief Information Officer at Ally Financial

“Together, we have broken new ground, advancing a quantum-based solution to a portfolio optimization problem that remains challenging for classical computers. As quantum hardware performance improves, there will be increased opportunities to provide even better returns with less market risk,” said Ally Financial’s Chief

Information, Data and Digital Officer Sathish Muthukrishnan. “I’m proud of the quantum team in continuing to explore various use cases that benefit our customers and help Ally to see around

corners.”

Leveraging previous hybrid classical-quantum approaches, the researchers built investment portfolios for companies in the Nasdaq 100 and the S&P 500 and used daily returns over the course of a year.

The team then used the algorithm to build investment portfolios that can generate the same financial returns as traditional portfolios with significantly smaller groups of stocks. Replicating financial indexes using a limited subset of assets, known as cardinality constraints, has historically been an extremely difficult challenge. The number of stocks in the team’s Nasdaq 100 fund was four times smaller than traditional portfolios and 10 times smaller in the S&P 500 fund.

The research team also built an enhanced tracking portfolio as part of the project, which showed that the quantum-built portfolios significantly outperformed the risk profile of the target index by up to 2x.

“Financial managers can use the algorithm today to meet specific investing goals or other customized requirements for clients,” said Mehdi Bozzo-Rey, Chief Revenue Officer at Multiverse Computing. “Once the hardware achieves quantum advantage, we will be able to solve this problem instantaneously and solve it exactly.”

“For example, this new algorithm can be used for managing ETF funds, reducing overhead costs for financial managers while helping keep fees low for customers,” according to Konstantinos Karagiannis, Protiviti’s director of [Quantum Computing Services](#). “It’s a major step forward in placing Ally Financial at the forefront of quantum computing research in the financial industry.”

Sam Palmer, head of Financial Engineering at Multiverse Computing, co-authored the research paper along with Karagiannis and Adam Florence, Director of Data Science at Ally Financial.

About Protiviti

Protiviti (www.protiviti.com) is a global consulting firm that delivers deep expertise, objective insights, a tailored approach and unparalleled collaboration to help leaders confidently face the future. Protiviti and its independent and locally owned Member Firms provide clients with consulting and managed solutions in finance, technology, operations, data, digital, legal, governance, risk and internal audit through its network of more than 85 offices in over 25 countries.

Named to the 2022 Fortune 100 Best Companies to Work For® list, Protiviti has served more than 80 percent of Fortune 100 and nearly 80 percent of Fortune 500 companies. The firm also works with smaller, growing companies, including those looking to go public, as well as with government agencies. Protiviti is a wholly owned subsidiary of Robert Half (NYSE: RHI). Founded in 1948, Robert Half is a member of the S&P 500 index.

About Multiverse Computing

Multiverse Computing is a leading quantum software company that applies quantum and quantum-inspired solutions to tackle complex problems to deliver value today and enable a more resilient and prosperous economy. The company's expertise in quantum algorithms and quantum-inspired algorithms means it can secure maximum results from current quantum devices as well as classical high performance computers. Its flagship product, Singularity, allows professionals across all industries to leverage quantum computing with common software tools. The company serves companies in the finance, mobility, energy, life sciences and advanced manufacturing verticals.

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