Ferrari of Finance: Accelerated Computing Drives Milan Bank Forward

Mediobanca is thriving in a downturn thanks to real-time market analysis on NVIDIA GPUs, a service it's about to extend to customers.

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Banks require more than cash in the vault these days, they also need accelerated computing in the back room.

"The boost we're getting with GPUs not only significantly improved our performance at the same cost, it helped us redefine our business and sharpen our focus on customers," said Marco Airoldi, who's been head of financial engineering for more than 20 years at Mediobanca, a Milan-based banking group that provides lending and investment services in Europe.

High performance computing is especially important for investment banks whose services involve computationally intensive transactions on baskets of securities and derivative products.

Thanks, in part, to its GPU-powered systems, Mediobanca is thriving amid the current market downturn.

"We can't disclose numbers, but I can tell you with a good degree of confidence I don't think we've had more than a dozen negative days in the last 250 trading days," said Stefano Dova, a Ph.D. in finance and head of markets at Mediobanca.

That's, in part, because Airoldi's team enabled real-time risk management on GPUs early in the year.

"It's a fundamental step forward," said Dova, who plays his electric piano or clarinet to unwind at the end of a stressful day. "You can lose money on a daily basis in the current market volatility, but we've been very happy with the results we've had in the last six months."

Now, Mediobanca is preparing to offer its customers the same computing capabilities it enjoys.

"Because the GPUs are so fast, we can offer clients the ability to build their own products and see their risk profiles in real time, so they can decide where and when to invest — you can only do this if you have the computational power for live pricing," Dova said.

The service, now in final testing, puts customers at the center of the bank's business. It uses automation made possible by the parallel computing capabilities of the bank's infrastructure, Airoldi notes.

Looking further ahead, Airoldi's group is mapping the investment bank's journey into AI.

It starts with sentiment analysis, powered by natural language processing. That will help the bank understand market trends more deeply, so it can make even better investment decisions.

"AI will give us useful ways to map customer and investor behaviors, and we will invest in the technology to develop more AI apps for finance," said Dova.

Their work comes as banks of all sorts are starting to apply AI to dozens of use cases .

"AI is one of the most promising technologies in finance," said Airoldi, who foresees using it for classical quantitative problems, too.

In the last few years, the bank has added dozens of GPUs to its infrastructure. Each offers up to 100x the performance of a CPU, he said.

That means Mediobanca can do more with less. It reduces its total cost of ownership while accelerating workloads that create competitive advantages such as Monte Carlo simulations used to create and price advanced investment products.

Under the hood, great financial performance is based on excellence in math, said Airoldi, who earned his Ph.D. in theoretical condensed matter physics.

“The mathematical models and numeric methods of finance are closely related to those found in theoretical physics, so investment banking is a great job for a physicist,” he said.

When Airoldi needs a break from work, you might find him playing chess in the Piazza della Scala, across from the famed opera house, just around the corner from the bank’s headquarters.

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