AI for Finance

The Rady School of Management Masters of Quantitative Finance program at UC San Diego continues its commitment to innovative teaching with the *AI for Finance* course, an MQF elective taught by Fabrizio Ghezzi. https://www.linkedin.com/in/fabrizio-ghezzi-547a96271/

The course is designed to expose students to state-of-the-art alternative data sources that extend well beyond text data. These include images, audio, geolocation signals, and more, reinforcing the idea that in today's data landscape, almost anything can become a valuable source of information.

Building on this foundation, students are introduced to modern AI and machine learning methodologies for analyzing alternative data. The curriculum covers the core architectures underlying large language models and generative AI systems. By examining these models in depth, students move beyond treating them as "black boxes" and instead develop a practical understanding of how to interpret, manage, and apply them effectively.

Throughout the course, strong emphasis is placed on the interaction between data, methods, and financial applications. Students are also brought to the research frontier through in-class discussion of recent academic papers. For example, the *Granular Economic Model*, developed by Ghezzi in collaboration with Allan Timmermann, leverages alternative data—such as geolocation and traffic flow—to estimate economic activity at unprecedented levels of detail, including ZIP code and hourly frequency. As an unsupervised learning approach, the model bridges traditional and alternative data sources while incorporating rigorous, state-of-the-art methodologies.

The course also features guest lectures from leading finance practitioners, helping to bridge the gap between academic theory and industry practice.

Ultimately, *AI for Finance* continues University of California San Diego's longstanding tradition of connecting cutting-edge research with real-world application.

Student Comments:

G:
One of the most valuable learnings from this course has been developing a structured framework for working with alternative and unstructured data such as images, audio, videos, news articles, and understanding how these inputs can be transformed into actionable signals in financial markets. The course strikes a great balance: it is technical enough that, as financial analysts, we can actually leverage frontier AI tools and apply them

directly to our research from day one, rather than just discussing them at a conceptual level. It has helped me develop a solid foundation for understanding how LLMs work under the hood and, more importantly, how to use them properly to extract actionable insights. Moreover, I find it very valuable to have formal, rigorous instruction on a set of topics that are evolving so quickly they would be significantly harder to learn on one's own.

D:
AI is undeniably the defining technology of our moment — but knowing how to apply it within your specific field is the real challenge. For finance, Professor Ghezzi's AI in Finance course is a compelling part of the answer. The course centres on alternative data: non-traditional sources — satellite imagery, weather maps, news articles — originally generated for other purposes but now, thanks to advances in AI, powerful tools for financial insight. It teaches a framework for evaluating any new data source, which matters because what's available today may look very different in five years.
Direct engagement with frontier research keeps the course feeling alive. Reading recent papers on generating alpha, improving the accuracy of AI-driven analysis, and real-world applications of alternative data makes clear we're not just studying what's established, but what's emerging.
A team project ties it all together, taking us through the full pipeline — from sourcing and cleaning alternative data to applying it to a real finance question. Putting the tools into practice deepens understanding of the concepts in a way that theory alone can't.