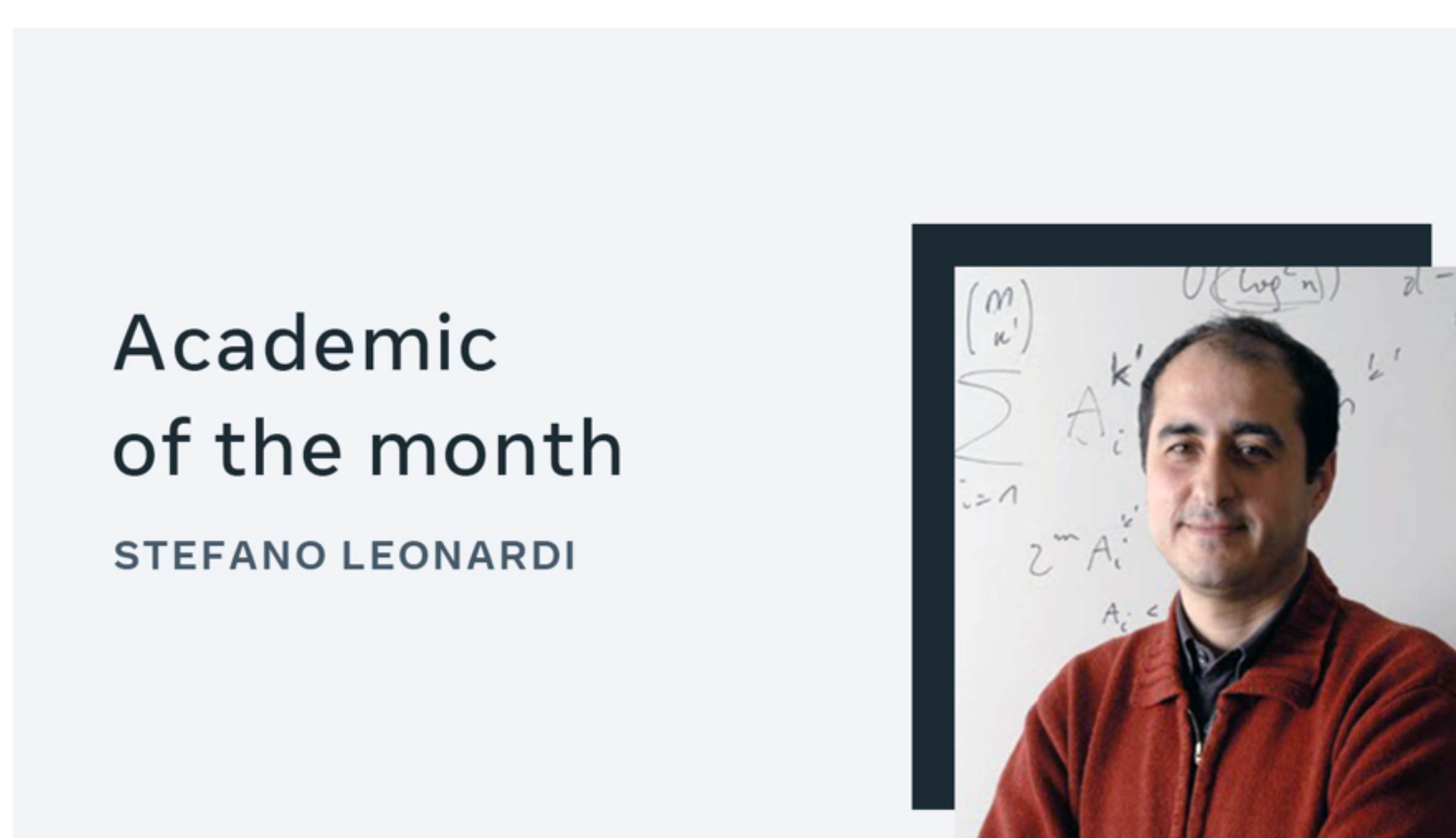


14 APRILE 2022

Q&A with Stefano Leonardi, professor and principal investigator at Sapienza University of Rome

Di: Meta Research



In this monthly interview series, we turn the spotlight on members of the academic community and the important research they do — as thought partners, collaborators, and independent contributors.

For April, we nominated Stefano Leonardi, a full professor in the Department of Computer, Control and Management Engineering at Sapienza University of Rome. Stefano Leonardi chairs the algorithms and data science research group and the data science PhD program at Sapienza. He is a prominent thought leader in algorithm theory and economics and computation, and his contribution to this field spans from having numerous top-tier publications to being the conference chair at venues such as STOC, the Web Conference, and WINE.

In this Q&A, Leonardi shares more about his collaboration with the Core Data Science (CDS) team, the paper he published with the CDS team for the the Web Conference in 2021, and the problems he's most passionate about solving as his research continues to evolve.

Q: Can you tell us about your background in academia, your role at Sapienza University of Rome, and the type of research you specialize in?

Stefano Leonardi: My research is broadly focused on algorithmic and mechanism design research and bridging the gap to applications in online markets, and I specialize in approximation and online algorithms, algorithmic game theory and mechanism design, web algorithmics, machine learning (ML), and data mining. I use a theoretical framework to solve problems that are important to the industry.

I have been collaborating with Meta and across the Core Data Science team for several years. While I'm based in Rome, I visit London to spend time with the team in person about once a month. Together, we've published two papers. We are engaged in several new projects and most recently shared our research about using [stochastic bandits for multi-platform budget optimization in online advertising](#) at the Web Conference 2021.

Q: What have you been working on lately, and how do you collaborate with the CDS team?

SL: I'm interested in online marketplaces and network economics, and have been focused on algorithmic mechanisms for the sharing economy. Our team's efforts are centered on how we can design things that make matching between buyers and sellers on online markets as efficient as possible. Working with the CDS team, we collaborate closely to define and formulate each problem and use clear methodologies to solve it.

Collaboration with Meta is also very important for university and academic research. The work we do with Meta is always about understanding difficult problems. With our collaboration, we have an incredible opportunity to learn from the people who are actually deploying products on the platforms we study. It gives me the chance to talk with engineers who think about advancements in research, different ways to formulate problems and design models, requesting interactions, and more.

Q: Tell us about [the paper](#) you cowrote with the Meta Core Data Science team and published at the 2021 Web Conference. What is this research about?

SL: The paper was the second project I worked on with the CDS team, and it was about determining the best possible placement for bids across multiple social platforms — such as Facebook, Instagram, and so forth — as a sponsor search option. This project was particularly exciting because we were solving a multidimensional problem in which we needed to evaluate price, opportunities, and additional criteria. The results focus on designing an online system able to learn over time from different platforms, and deciding how to best determine advertisers' budget allocation across them.

Our next step is to understand how the advertising system can be even more fair and transparent across multiple categories of users and advertisers. This aims to address some of the most urgent questions people have while sharing the impact of technology on economics, business, and society.

Q: Are there any research challenges or topics you're excited about in the algorithmic game theory space or with your ongoing collaboration with Meta?

SL: The industry changes quickly, and we're defining and solving problems now that were nonexistent when I did my PhD 25 years ago, or even 10 years ago. I'm especially interested in how we can explore the knowledge we get from markets — particularly with ML models and dynamic settings. We're on the forefront of revolutionary changes at Meta, and we're thinking about things like, "How can we turn a complex online economic mechanism into one that is just as good but more transparent and requires less information?"

I'm continually inspired by the potential impact we can make with our research. I appreciate having the opportunity to witness this change — and be part of it within a company — as opposed to simply learning from peers who are doing the work and publishing papers about it. Collaborating with CDS gives us insight earlier on, and we can really see and measure the tangible impact of our efforts firsthand. Meta is helping drive advancements in ML, and we've seen a dramatic shift in just the last decade. These changes have presented novel and important problems for not only academic researchers today but also researchers of tomorrow.

Q: Where can people learn more about you and your work?

SL: My [website](#) is the best place to learn more about my teaching, research, and publications.

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