DIPARTIMENTO MATEMATICA
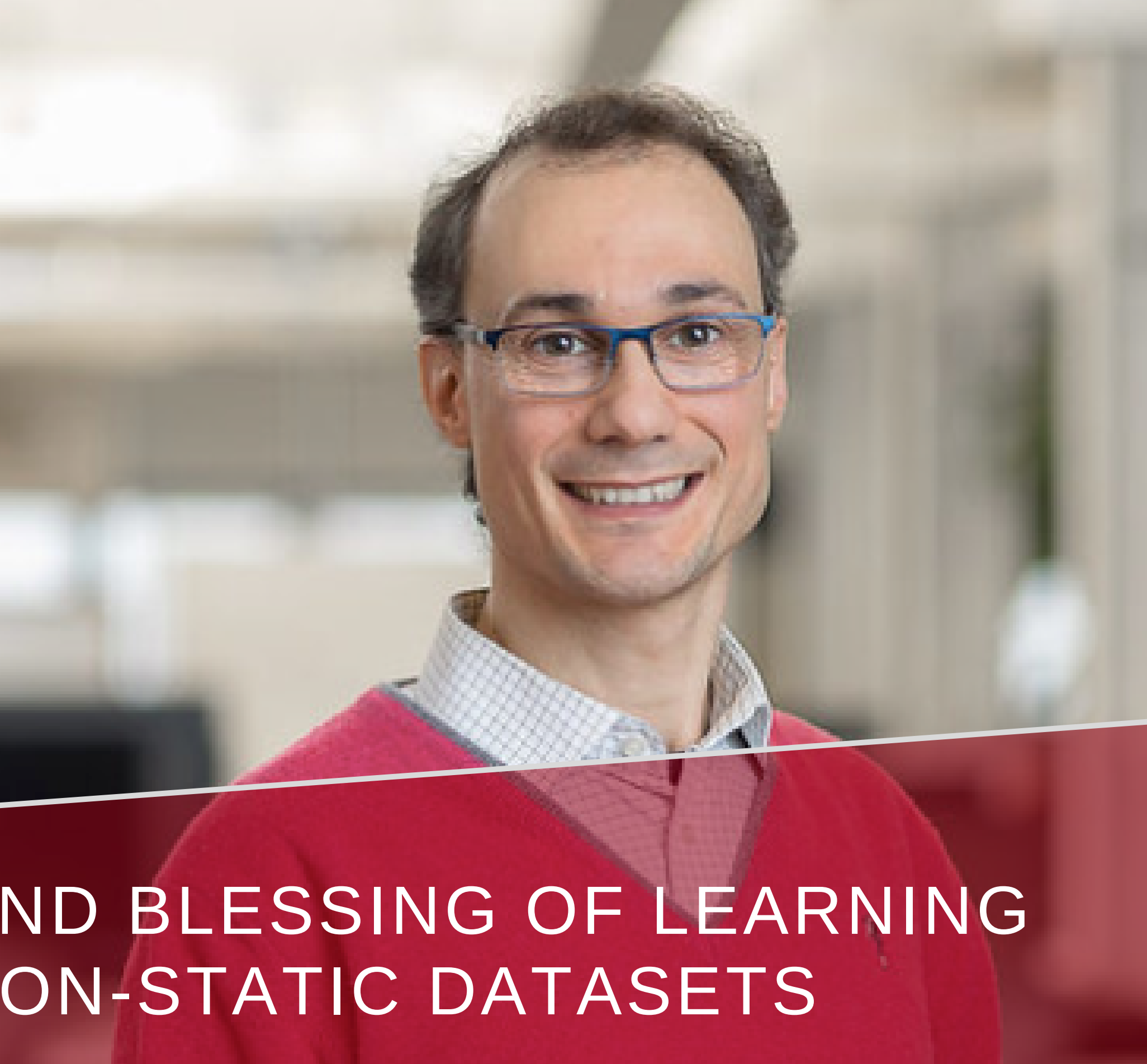DIPARTIMENTO DI MATEMATICA "TULLIO LEVI-CIVITA"

COLLOQUIA PATAVINA

Marc'Aurelio Ranzato
Facebook AI Research Lab, New York

JUNE 8, 4:00pm

THE CURSE AND BLESSING OF LEARNING FROM NON-STATIC DATASETS

YouTube Live Streaming | https://www.youtube.com/c/DipartimentodiMatematicaTullioLeviCivita/live

Abstract

In the classical empirical risk minimization framework of machine learning, learners observe samples from a dataset all at once. In practice, datasets are seldom a static object and data arrives a little bit at the time instead. New chunks of data may be added over time, and their distribution may be even non-stationary, as it is typical in robotics applications, for instance.

This new learning setting is clearly more difficult to characterize, but it offers an unprecedented opportunity to reduce sample complexity. Such a learning setting is related to continual learning and anytime learning, subfields of machine learning which have seen a recent surge of interest from the research community interested in learning with limited supervision.

In this talk, I will formalize this learning setting, propose metrics and benchmarks to test the ability of learning algorithms to transfer knowledge acquired in the past. I will also introduce a modular architecture that has proven to be very effective and efficient across a variety of data streams. hese promising results indicate that it might be possible to efficiently leverage past experience to reduce the amount of supervision needed to learn a new task and that non-static models can be highly effective at learning from non-static datasets, opening a new and exciting avenue of research.

Short Bio

Marc'Aurelio Ranzato is a research scientist at the Facebook AI Research lab in New York City. His research interests are in the area of unsupervised learning, continual learning and transfer learning, with applications to vision, natural language understanding and speech recognition. Marc'Aurelio is originally from Padova in Italy, where he graduated in Electronics Engineering. He was a founding member of the Facebook AI Research lab. Marc'Aurelio has served as program chair for ICLR 2017, ICLR 2018 and NeurIPS 2020. He is the general chair of NeurIPS 2021.

More infos