

Special Session

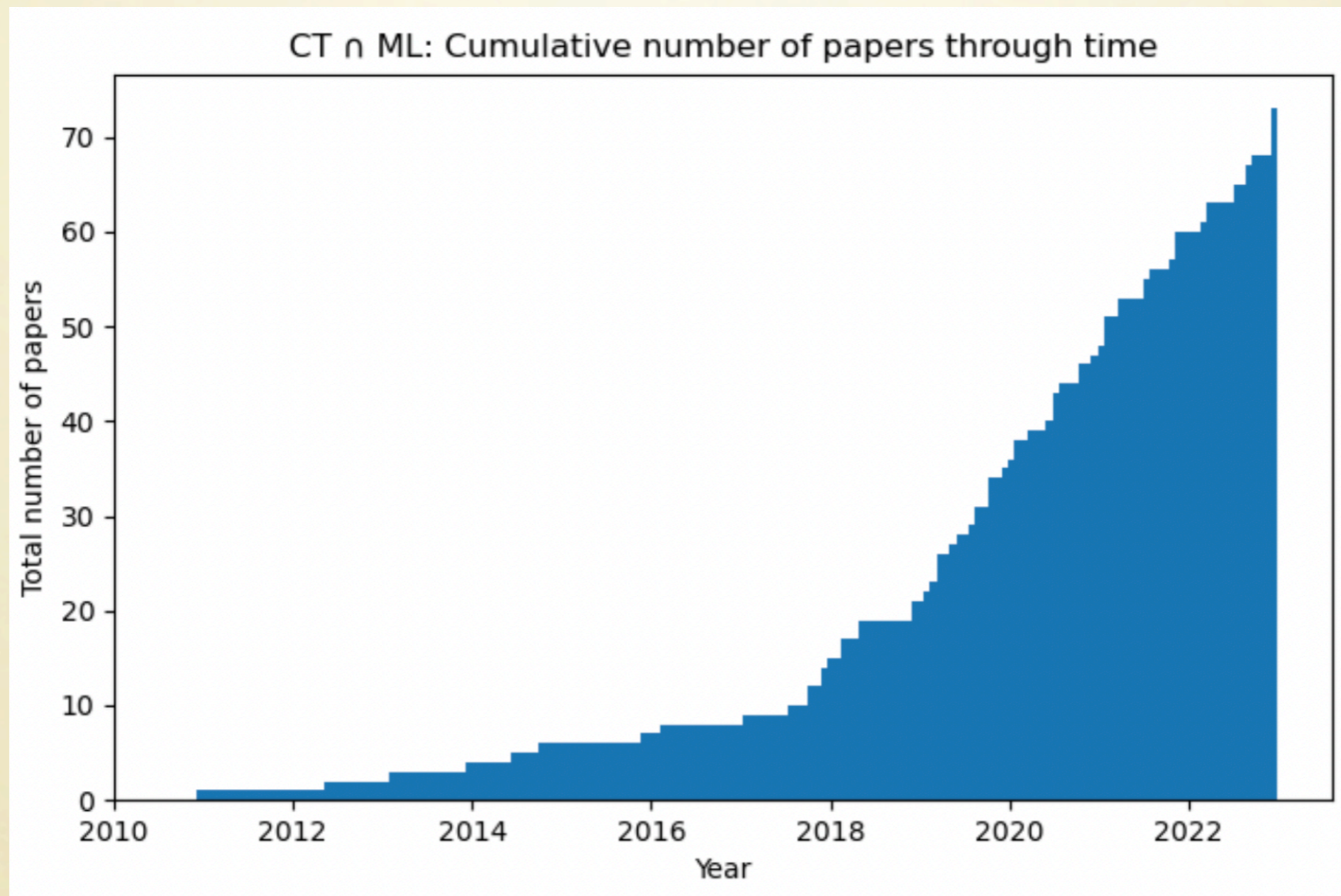
Category Theory in Machine Learning

Welcome and Introduction

Fabio Zanasi

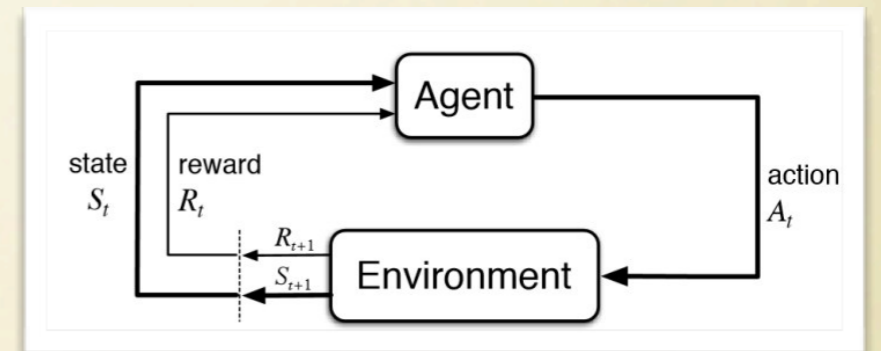
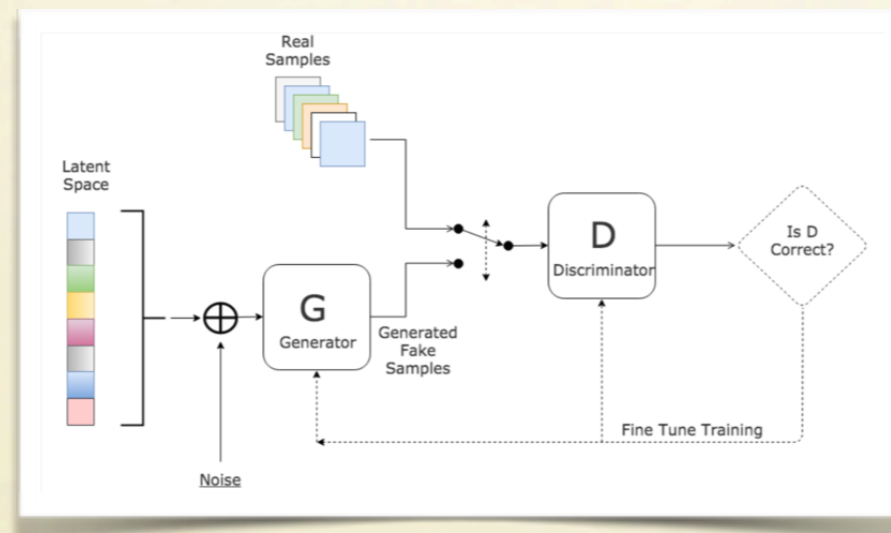
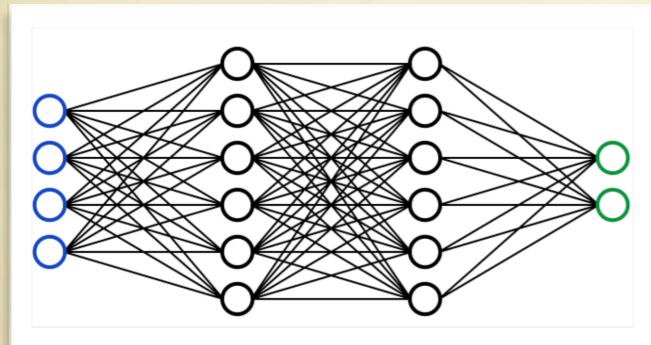
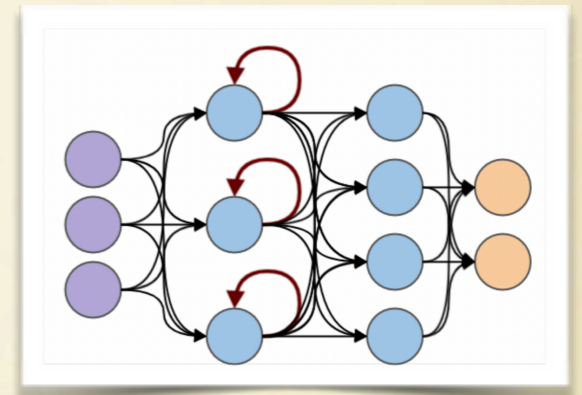
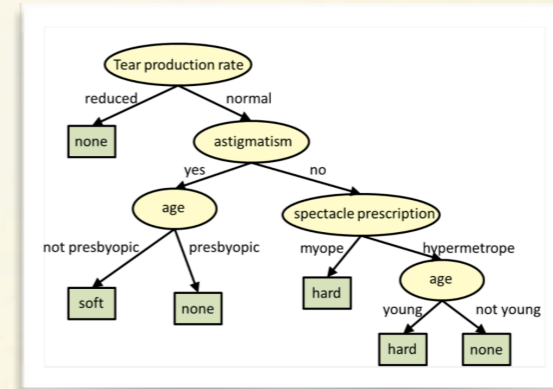
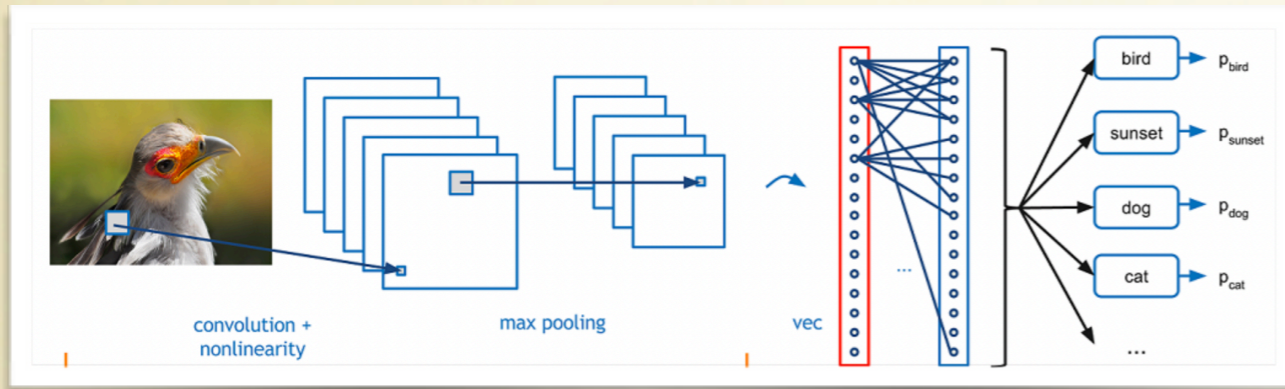


Category Theory \cap Machine Learning



From: https://github.com/bgavran/Category_Theory_Machine_Learning

Foundations of Machine Learning. What for?



Uniformity

Explainability

Prog. Principles

Trustworthiness

Trends

Areas

Deep learning

Probability/Statistics/
Bayesian learning

Differentiable programming/
Automatic Differentiation

Methodologies

Functional programming

Type theory

Formal methods

Categorical Semantics

Optics, Lenses, Decorated Cospans, Coalgebras, Differential Categories, ...

In this session

15:40 - 16:10	Differential Categories and Machine Learning Jean-Simon Pacaud Lemay Abstract
16:10 - 16:40	A dynamic monoidal category for deep learning Brandon Shapiro Abstract
16:40 - 17:10	Is there a place for semantics in machine learning? Prakash Panangaden Abstract
17:10 - 17:45	Panel

Getting Started

Dan Shiebler, Bruno Gavranović, Paul Wilson

a survey paper:

Category Theory in Machine Learning,
proceedings of Applied Category Theory (2021)

Bruno Gavranović

a curated list of papers approaching machine learning
from a category-theoretic perspective:

https://github.com/bgavran/Category_Theory_Machine_Learning