

# Probabilistic Programming for Scientific Discovery

Lecture 3

Ludger Paehler

Lviv Data Science Summer School

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#### **Outline**

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Theory



Theory



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Chair of Aerodynamics and Fluid Mechanics Department of Mechanical Engineering Technical University of Munich



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Type 2 Systems: Marrying Deep Learning with Probabilistic Programming



# What is type 2?

• Definition of type 2 machine learning from Yoshua Bengio's talk with reference



# **Including Generative Models**

- Oracle construction or surrogates whatever you seek to call it
- GANs
  - Theory
  - Embedded in a probabilistic programming system
- Variational Autoencoders
  - Theory
  - Embedded in a probabilistic programming system



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