University of Zurich UZH

UZH ML Workshop

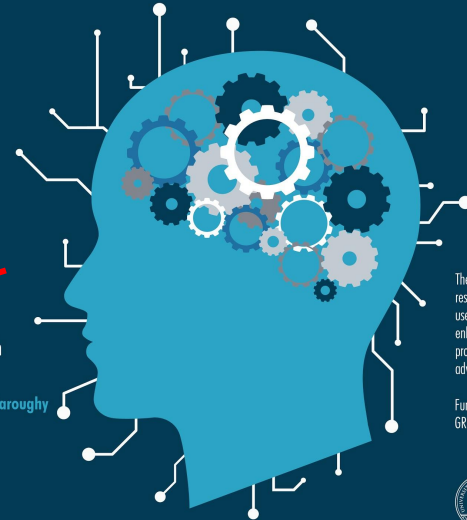**Vinicius Mikuni**, Darius Faroughy**,** Davide Lancierini

Thanks

- **Why?**
  - ▷ Diverse number of research areas at **UZH** that we don't often hear about
  - ▷ **ML** bridges the gap between different fields by using **similar strategies** to solve very **different problems**
- New **collaborations** and **ideas**
- Create a **community of ML enthusiasts** to share their findings and experience
- All the organizers are **particle physicists**, so we tried to have as much **diversity** as we could

Logistics

- The workshop is going to take place **this afternoon** and **tomorrow** the **whole day**
- All **talks** will be given **today**, while the **tutorials** are scheduled for **tomorrow**
- Each tutorial has a **dedicated page**, where additional material will be uploaded after and also during the hands-on sessions
- **Recordings**: We would like to record the sessions for future reference, so you can also watch it later
- If you have a **question,** don't exitate to **ask**! Different research subjects means topics we have no clue about
    - To ask a question on Zoom, "**raise your hand**" after the talk and we go through them
    - You can also **write** your question **in the chat box** if you prefer

Dedicated tutorials

- **hls4ml tutorial**: Ultra low-latency deep neural network inference on FPGAs
  - ▷ https://indico.cern.ch/event/975795/
- A Machine Learning journey from customer reviews to business insights
  - ▷ https://indico.cern.ch/event/974224/
- GANS tutorial for High Energy Physics applications
  - ▷ https://indico.cern.ch/event/973553/

Timetable

13:00		
Introduction		*Vinicius Massami Mikuni*
online, UZH, Zurich		13:00 - 13:10
Autonomous quadrotors		*Antonio Loquercio*
online, UZH, Zurich		13:10 - 13:40
Application of machine learning methods in gravitational wave astrophysics		*Dixeena Lopez*
online, UZH, Zurich		13:40 - 14:10

14:00

Coffee break		
online, UZH, Zurich		14:10 - 14:30
Identifying Anomalous Shared E-Scooter Patterns Using Unsupervised Deep Learning		*Yanan Xin et al.*
online, UZH, Zurich		14:30 - 15:00

15:00

Machine Learning techniques in gamma-ray astrophysics		*Dr Alison Mitchell*
online, UZH, Zurich		15:00 - 15:30
Which shoes fit this dress? Using product images to infer "perfect pairings" without supervision		📎
Mr Luca Gaegauf et al.		

16:00

Coffee break		
online, UZH, Zurich		16:00 - 16:20
Machine learning in quantum chemistry		*Michela Pauletti* 📎
online, UZH, Zurich		16:20 - 16:50
Searching for new physics with Variational Autoencoders		*Barry Dillon*
online, UZH, Zurich		16:50 - 17:20

17:00

Financial documents processing with NLP		*Markus Leippold et al.* 📎
online, UZH, Zurich		17:20 - 17:50

18:00

Questions and answers with the speakers		
online, UZH, Zurich		17:50 - 18:20
Hands-on information		*Davide Lancierini*
online, UZH, Zurich		18:20 - 18:30

Breakout sessions with the speakers

Breakout sessions with the speakers

Breakout rooms

- During the coffee breaks, **breakout rooms** will be **available** to discuss the talks of the previous session
- You will be first assigned to the "**corridor**", from where you can **choose** which room you want to join
- Just click the **Breakout Rooms icon** to see the available options

Breakout Rooms

Picture time