

4th GraphNeT Workshop

Graph Neural Networks and Beyond

Institute for Advanced Study / Munich, 6th - 9th of May, 2024



MDSI

SFB 1258

Neutrinos
Dark Matter
Messengers



Where are we?

TUM Campus Garching

20km north of Munich

City of Garching just
1 stop away

Campus landmarks:

Two nuclear reactors

Subway station

Isar river



Campus Cat

Unofficial mascot of the campus

Lives in Garching (not a stray cat) but makes its way to the campus when the weather is nice

Has a short tail and **loves** attention



Who are we?

If you need anything

+45 40515231

rasmus.orsoe@tum.de



Troels Petersen (NBI)



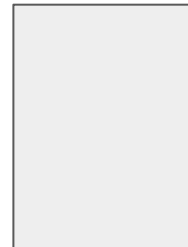
Philipp Eller (TUM)



Rasmus Orsoe (TUM)



Arturo Llorente Anaya (TUM)



Frederik Hansen (NBI)

Over 20 people have helped develop GraphNeT and support its use in multiple physics analyses and neutrino experiments

Why a workshop?

Our data and challenges are much alike

Data from our respective experiments, and the challenges we face in processing it are - from the perspective of deep learning - quite a like.

Working together makes a lot of sense

Because the nature of the problems we face are so alike, we can forging partnerships to tackle common challenges, develop common tools and move the field forward.

Taking time out of a busy schedule

By setting aside time to work on single challenges, in a new environment and with like-minded people, we hope you leave with a clear path forward - and new friends!

Past Workshops

May 2022 - Copenhagen (DK)
Sep. 2022 - Munich (DE)
May 2023 - Bornholm (DK)
May 2024 - Munich (DE)

Workshop goals

Community around deep learning for neutrino physics

The flexibility of deep learning techniques allows us to work closely together. This sets the stage for sharing models, tips and training techniques.

(re)-Introducing you to GraphNeT

Working together across experiments is hard due to incompatible code bases and closed data policies. GraphNeT solves this!



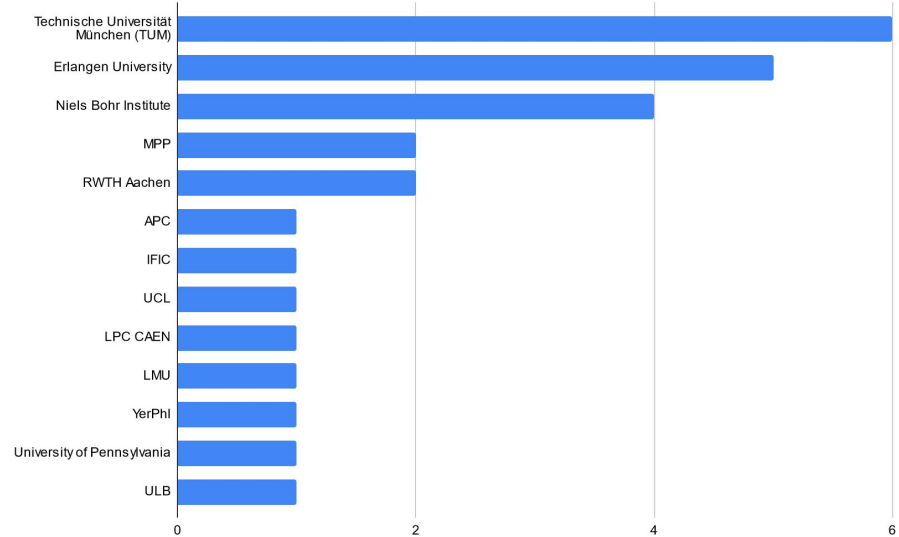
3rd GraphNeT Workshop, May 2023, Bornholm (DK)

Who are you?

30 people

6 different countries

13 different institutions



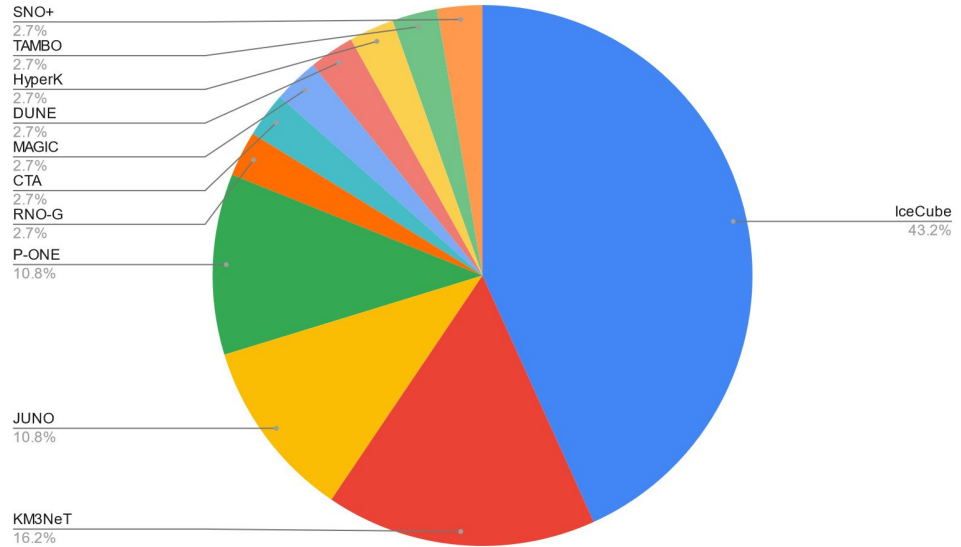
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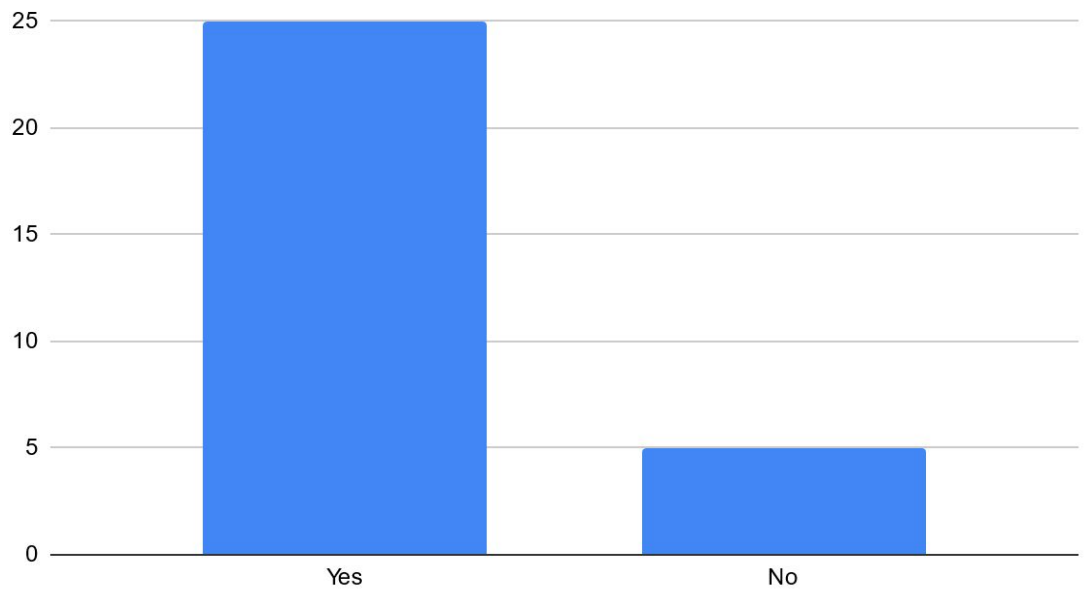
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Most have experience with deep learning

Do you have experience in deep learning?



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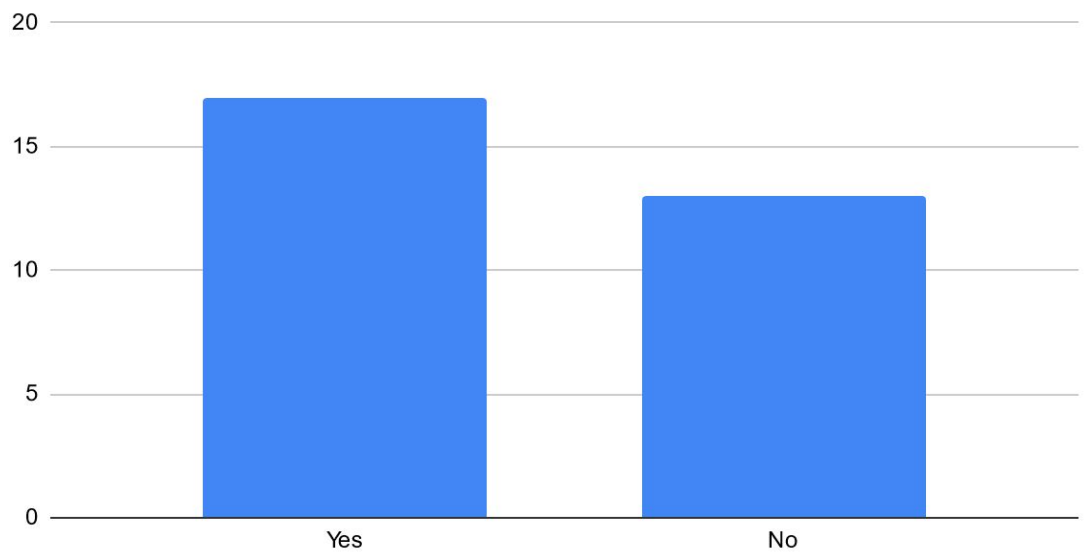
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Most have experience with deep learning

Many have a problem to solve

Is there a particular problem you'd like to work on during the hackathons?



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Most have experience
with deep learning

Many have a problem to
solve

Implementing support for KM3NeT in GraphNeT

Track classification and Magnetic
Monopole searches in IceCube.

Filtering thermal noise in RNO-G

Classification and triggering in P-ONE.

Event Classification and Reconstruction for Dark
Matter Scatters in SNO+

Running models on FPGAs

**Using GraphNeT on my own so I don't need to
pester my poor PhD students all the time for
making plots**

Directional reconstruction for TAMBO

Workshop Sponsors

Due to the generous support from ORIGINS, MDSI and SFB1258, we can offer coffee breaks, lunch and venue without participation fees.

The only “price” is that you fill out the attendance sheet.

**Remember to fill out
the attendance sheet**



Daily Agenda

09:00 - Morning Coffee and Snacks are served

Feel free to show up early for morning coffee and informal chats

9:30 - 12:00: Talks in Auditorium

Talks are informal with a generous 30 minute time slot where 10 minutes are allocated for questions.

12:00 - Lunch is served on the top floor (“Faculty Club”)

13:00 - 17:00: Hackathon session on the top floor (“Faculty Club”)

Hackathons are hands-on sessions where we collaborate on current challenges, using GraphNeT

Practicalities

Poster session tomorrow 16:30 - 18:00

with beers and pretzels!

Workshop Dinner Tomorrow 18:30

After the poster session we'll jump in the metro and go to [Garchinger Augustiner](#) (one stop)

Slack for Communication

In the email confirming your attendance to the workshop, there is a link to the GraphNeT slack.

We'll use **#workshop-munich-2024**



Practicalities

Restrooms

In the basement and on the first floor (follow the signs)

Internet

Eduroam
BayernWLAN