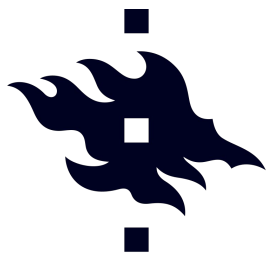


# Intro to ProbAi — 2022

Luigi Acerbi & Arto Klami

Department of Computer Science

University of Helsinki



UNIVERSITY OF HELSINKI



An aerial photograph of a university campus, tinted in a solid blue color. The image shows several modern, multi-story buildings with flat roofs and large windows. In the center, a building features a sign with a stylized logo and the letters "EXA". To the right, a tall, narrow building has a large white spherical structure on its roof. The background is filled with a dense line of trees under a clear sky.

# Welcome!

ProbAi — 2022

# Outline (9:00–10:00)

- School practicalities and organization (Luigi)
- Probabilistic AI – What is it? (Arto)

# The most important human need

## WiFi

- Use **eduroam** if you have access (faster, better).
- Otherwise **probai2022** with password **Bayes2022**.

# Code of conduct

<http://probabilistic.ai/attendees>

We aim for diversity, inclusion, openness, collaboration, and knowledge sharing.

1. Be welcoming and supportive.
2. Be respectful and keep a good tone.
3. Collaborate and share knowledge.
4. Respect personal boundaries.

# COVID-19 precautions

- Please **wear a mask** indoors and when it is difficult to avoid close contact.
- Avoid or limit close contacts.
- Clean frequently your hands either by washing or with **sanitizer**.
- If you have light symptoms suggestive of COVID-19, **test yourself**.
- If you have obvious symptoms suggestive of COVID-19 (flu-like or respiratory) or test positively, do not participate and isolate yourself.

<http://probabilistic.ai/join-slack-2022>

ProbAi — 2022

The screenshot displays the Slack interface for the #general channel. At the top, the header bar shows 'ProbAI 2022' with a dropdown arrow and a compose icon. Below this, the left sidebar lists various channels: 'All DMs', 'Slack Connect', 'More', 'Channels', and 'Direct messages'. Under 'Channels', there are links for '# day-1', '# day-2', '# day-3', '# day-4', '# day-5', '# general' (which is highlighted), '# probai-2022', and '# random'. There is also an '+ Add channels' button. Under 'Direct messages', there is a message from 'Luigi Acerbi you' and an '+ Add teammates' button. The main area on the right shows the '# general' channel details, including a notification: 'You're looking at the # general channel. This is the one channel that will always have the latest messages.' Below this are buttons for 'Add people' and 'Forward emails to this channel'. At the bottom, there is a message from 'tarik' at '1:05 AM' stating 'joined #general along with 19 others'. The bottom of the interface shows a message input area with a toolbar containing icons for bold, italic, strikethrough, link, list, code, and other formatting options, followed by the text 'Send a message to #general' and a row of icons for adding people, attachments, emojis, and other features.

ProbAI 2022 ▾

# general ▾

+ Add a bookmark

All DMs

Slack Connect

More

Channels

# day-1

# day-2

# day-3

# day-4

# day-5

# general

# probai-2022

# random

+ Add channels

Direct messages

Luigi Acerbi you

+ Add teammates

You're looking at the # general channel. This is the one channel that will always have the latest messages.

+ Add people

Forward emails to this channel

tarik 1:05 AM

joined #general along with 19 others

B I ⌂ 🔗 ☰ ☷ ☰ </>

Send a message to #general

+ 📎 🗣️ 😊 @ Aa

general 🔊 🔇

# How to contact us

1. In person!
2. Email: [hello@probabilistic.ai](mailto:hello@probabilistic.ai)
3. Slack
4. Anonymous online form

Ombudsperson  
(anything to report):



Arto  
Klami



# Program overview

<http://probabilistic.ai/program>

- Any lunch from the line
- Coffee **OR** fruit
- **NO** dessert

ProbAi — 2022

Mon 13/6	Tue 14/6	Wed 15/6	Thu 16/6	Fri 17/6
<b>07:30 – 09:00</b> Registration Exactum building, University of Helsinki, Pietari Kalmin			<b>08:15 - PhD Course (only re</b>	
<b>09:00 – 10:00</b> Probabilistic AI: Exactum building, University	<b>09:00 – 12:00</b> Variational Inference and Optimization 1 - Helge Langseth, Andrés R. Masegosa, Thomas D. Nielsen Exactum building, University of Helsinki, Pietari Kalmin	<b>09:00 – 12:00</b> Deep Generative Models - Rianne van den Berg Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland	<b>09:00 – 12:00</b> Neural ODEs - Çağatay Yıldız Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland	<b>09:00 – 12:00</b> Bayesian Neural Networks (with VI flavor) - Yingzhen Li Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland
<b>10:00 – 12:30</b> Introduction to Probabilistic Models - Antonio Salmerón Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki,				
<b>12:30 – 13:30</b> Lunch Unicafe Chemicum, A.I.	<b>12:00 – 13:00</b> Lunch Unicafe Chemicum, A.I.	<b>12:00 – 13:00</b> Lunch Unicafe Chemicum, A.I.	<b>12:00 – 13:00</b> Lunch Unicafe Chemicum, A.I.	<b>12:00 – 13:00</b> Lunch Unicafe Chemicum, A.I.
<b>13:30 – 15:00</b> Probabilistic Modeling and Programming - Andrés R. Masegosa, Thomas D. Nielsen Exactum building, University of Helsinki, Pietari Kalmin	<b>13:00 – 15:00</b> Variational Inference and Optimization 2 - Helge Langseth, Andrés R. Masegosa, Thomas D. Nielsen Exactum building, University of Helsinki, Pietari Kalmin	<b>13:00 – 15:00</b> Normalizing Flows - Didrik Nielsen Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland	<b>13:00 – 15:00</b> Simulator-Based Inference (Concept + ELFI Tutorial) - Henri Pesonen Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland	<b>13:00 – 15:00</b> BNN Advanced - José Miguel Hernández-Lobato Exactum building, University of Helsinki, Pietari Kalmin katu 5, 00560 Helsinki, Finland
<b>16:00 – Coffee Break</b>	<b>16:00 – Coffee Break</b>	<b>16:00 – Coffee Break</b>	<b>16:00 – Coffee Break</b>	
<b>15:00 – 17:00</b> Bayesian Workflow - Exactum building, University	<b>15:00 – 17:00</b> Variational Inference	<b>15:00 – 17:00</b> Gaussian Processes - Exactum building, University	<b>15:00 – 17:00</b> Human-Centric ML -	
<b>18:00 – 20:00</b> Visit to Unity Technologies (group 1) Kaivokatu 6 6th floor, 00100 Helsinki, Finland	<b>17:30 – 18:30</b> Poster Session 1 Exactum building, University		<b>17:30 – 18:30</b> Poster Session 2 Exactum building, University	
<b>20:00 – 22:00</b> Visit to Unity Technologies (group 2) Kaivokatu 6 6th floor, 00100 Helsinki, Finland		<b>19:00 – 22:00</b> Banquet / Dinner Porthania, Yliopistonkatu 3, 00100 Helsinki, Finland		

# Visit to Unity Technologies (today)

- **Group 1** (18:00 - 20:00) – go straight after lectures.
- **Group 2** (20:00 - 22:00) – optional sightseeing first.



**Everyone:** Sign up to Unity Technologies invite (**Envoy** app / website).

An aerial photograph of a university campus, overlaid with a solid blue color. The image shows several modern, multi-story buildings with flat roofs and large windows. In the center, a building features a sign with a stylized logo and the letters "EXA". To the right, a tall, narrow building is topped with a large, white, spherical dome. The background shows a dense line of trees under a clear sky.

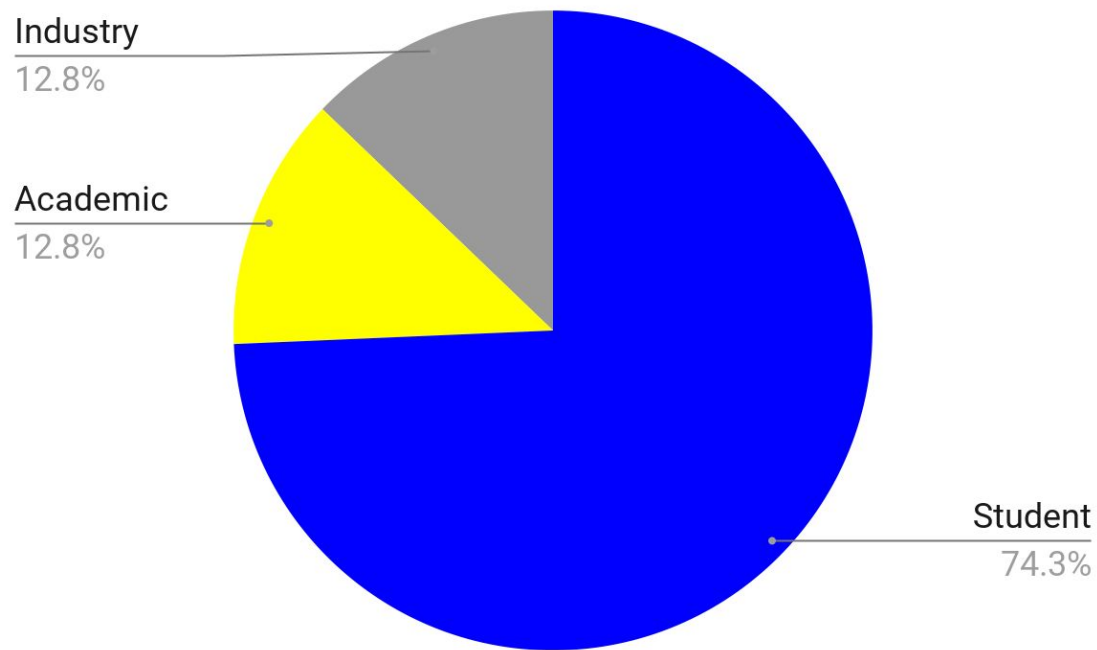
# Statistics

ProbAi — 2022

# Applications

- We had a record **775 applications**.
- Could only accept **150 participants** (~19% acceptance rate).
- It was a very difficult choice!

# Affiliations





## Country of residence



Created with mapchart.net

# ProbAi — 2022

An aerial photograph of a university campus, likely the University of Jyväskylä, featuring modern academic buildings and a prominent white spherical observatory dome on the right. The entire image is overlaid with a solid blue color.

# Acknowledgments

ProbAi — 2022

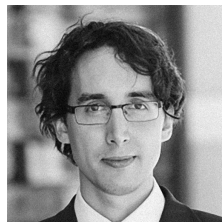
# Lecturers & speakers



Rianne van  
den Berg



Fani  
Deligianni



J. M. Hernández-  
Lobato



Arto Klami



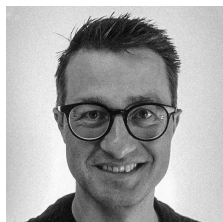
Helge  
Langseth



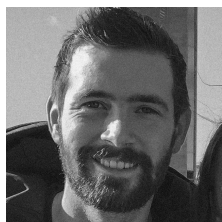
Yingzhen Li



Andrés R.  
Masegosa



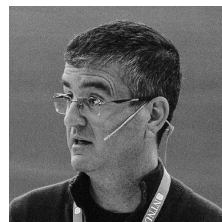
Thomas Dyhre  
Nielsen



Didrik  
Nielsen



Henri Pesonen



Antonio  
Salmerón



Elizaveta  
Semenova



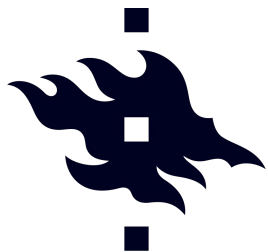
Arno Solin



Çağatay  
Yıldız



# Organizers



UNIVERSITY OF HELSINKI

**FCAI** Finnish  
Center for  
Artificial  
Intelligence



**NTNU**  
Norwegian University of  
Science and Technology

# Gold Sponsors

*NOKIA Bell Labs*

*Unity Technologies*

ProbAi — 2022

# ProbAI team

## Team of Directors



Luigi Acerbi



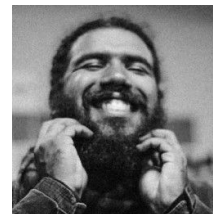
Arto Klami



Helge  
Langseth



Tárík S.  
Salem



Eliezer de  
Souza da Silva

## Executive Team



Grégoire  
Clarté



Mikko A.  
Heikkilä



Denys  
Iablonskyi



Sardana  
Ivanova



Ti John



Ludvig  
Killingberg



Tomasz  
Kuśmierczyk



Ella  
Tamir



Valter  
Uotila

**Contributors and TAs:** David Baumgartner, Raul Vazquez Carrillo, Shweta Vinay Gautam, Shayan Gharib, António Gois, Marcelo Hartmann, Sakira Hassan, Bobby Huggins, Marcus Klasson, Nikita Kostin, Chengkun Li, Stella Maropaki, Elio Nushi, Lorenzo Perini, Ossi Räisä, Malene Sjørlev Sørholm, Felix Tempel, Håkon Thorstensen, Martin Trapp, Bjørn Vassøy, Haoyu Wei, Bernardo Williams, and others...