



Tiny Machine Learning on Sony Spresense

International Student Contest: among ETH Zurich, Manchester Metropolitan University & University of Liverpool

Welcome to the 3rd edition of the Tiny Machine Learning on Sony Spresense Student Contest! This international competition invites teams of Ph.D., Master, and Bachelor students from ETH Zürich, Manchester Metropolitan University and the University of Liverpool, aiming to stimulate innovative ideas about machine learning in the area of smart wireless sensors. The D-ITET Center for Project Based Learning (PBL) jointly promotes and organizes this contest. SONY directly sponsors it and will provide one Spresense kit¹ to each shortlisted team to the competition. For the final event, three awards will be assigned (1st and 2nd-3rd place) for the best “Machine Learning project exploiting the Spresense platform”. The selected winners will have to attend in person the award session on September 19th 2024 in Manchester Metropolitan University, Manchester, United Kingdom (details to be announced).

Project focus, goals & outcomes:

- Machine learning algorithms
- Camera and image processing
- Audio processing
- GPS and smart position estimation
- LTE cellular connectivity
- Other sensors exploiting SPI, I2C, UART on the Spresense
- Making a self-sustaining solution with energy harvesting and low-power Tiny Machine Learning.
- Main goal: new use cases and applications for **Sony Spresense**

¹ <https://developer.sony.com/develop/spresense>

The competition is organized in three stages:

1st stage: Project Proposal (May 15th, 2024 CET)

Proposal Preparation and Submission:

The technical proposal (two pages maximum) must include:

- Project abstract
- The technical description of the project
- The novelty of the proposed application
- The planned usage of the Spresense kit and how the proposal exploits its potential
- Team member biographies

The template of the project proposal is provided.

Participating teams will include a maximum of 3 members.

After a preliminary check, the shortlisted teams will be notified and will receive the Spresense Kits by May 31st to start the project implementation.

2nd stage: Project Final Submission (July 31st, 2024 CET)

Final Preparation and Submission:

The final report (four pages maximum) must include:

- Project abstract
- The technical description of the project
- The novelty of the proposed application
- The usage of the Spresense kit and how its potential has been exploited
- Team member biographies

Moreover (submitted separately):

- A demo video (max. 100 MB, max 3 min.)
- Open source code, GitHub public repository

The three finalists will be announced on August 15th 2024.

3rd stage: Project Live Presentation (September 19th, 2024)

Final live presentation at Manchester Metropolitan University:

The PowerPoint presentation (15 minutes maximum) must include:

- Topic overview and open technical challenges
- The technical description of the project
- The novelty of the proposed application
- Conclusion and future works
- A demo video, or/and live demonstration

General Information

How to Submit:

The documents must be emailed to the PBL Team at (contest@pbl.ee.ethz.ch). Only PDF and MP4 are accepted for the project proposal (report) and the video, respectively.

The video can be attached to the email or linked to an external cloud storage. A GitHub link to an open access repository must be attached in the email.

Info and Q&A:

Support at SONY forum developer: <https://forum.developer.sony.com/category/fd009783-3a61-4d48-a448-e7dd67272c07>

Project Selection Criteria:

The organizing committee will evaluate the submissions based on the following criteria:

- Scientific excellence
- Novelty
- Potential impact
- Quality of the demo video and live demonstration

Teams will be notified about the evaluation outcome shortly after the proposal submission deadline.

Industry Sponsor:

SONY

Sponsored prizes:

1. 1st place: 1x PlayStation slim
2. 2nd place: 3x WH1000XM5/ noise cancelling headphones
3. 3rd place: 3x WF1000XM5/ earbuds

Organizing and Proposal Selection Committee:

- Dr. Michele Magno, PBL D-ITET, ETH Zurich, Switzerland
- Dr. Tommaso Polonelli, PBL D-ITET, ETH Zurich, Switzerland
- Prof. Dr. Sunday Ekpo, MMU, United Kingdom
- Prof. Dr. Jiafeng Zhou, Liverpool, United Kingdom
- Jessica Paiva Santos, SONY
- Reference contact: contest@pbl.ee.ethz.ch