

## Track3 "Smartphone (offsite-online)"

### Organizational aspects:

#### Database/dataset download

- As in the previous editions, the full dataset is split into three subsets as usual: training, testing and scoring.
  - Training data**, which are provided as off-line files and are used to calibrate the system (former training logfiles).
  - Testing trials**, which are provided through the EvaalAPI and are reloadable. Competitors can run them as many times as they like to evaluate and fine-tune their system as well as to get used to the EvaalAPI (former validation logfiles)
  - Scoring trials**, which are provided through the EvaalAPI and are non-reloadable. **Those are used to evaluate the competitors and can be run only once (former evaluation logfiles).**
- Training, testing and scoring datasets were recorded with Android smartphones and they have been stored in txt logfiles. Training data are provided as txt files (logfiles), whereas testing and scoring data are provided by means of the EvaalAPI respectively as testing trials (reloadable) and scoring trials (non-reloadable).
- In order to run a trial in the EvaalAPI, competitors have to ask [info@evaal.aaloa.org](mailto:info@evaal.aaloa.org) for a trial code.

#### Submission of results

- Despite being an off-site track, we will ask to competitors to process data as if they were streamed in real time. To do so, we rely on the EvaalAPI. This API will be used by competitors for sending position estimates and reading the sensor readouts: <https://evaal.aaloa.org/evaalapi/>
- A participant team can run the evaluation process up to **2 times**. This lets a chance to catch-up if any issues happen. Although the competition organizers will evaluate the **two scoring trials**, the contest will consider only the best performing one. These two scoring trials may correspond to two different data collection sessions collected with different smartphones and actors.
- All materials will be available online in Zenodo after the competition.

#### NOVELTIES 2025:

**The location for the competition is new, being a campus facility in Tampere (Finland)**

**Maps may not be fully available**

**We have updated the GetSensorsData APP to be compatible with recent smartphones**

**We will provide the starting point for the Scoring Trials within the EvAAL API**

#### Submission deadline of the post-processed indoor coordinates

- |  |                            |
|--|----------------------------|
| • Training data available in the website                             | <b>Mid-End June 2025</b>   |
| • Testing trials (validation, reloadable) available in EvaalAPI:     | <b>Mid-End June 2025</b>   |
| • Application deadline:  | <b>TBD</b>                 |
| • Scoring trials (evaluation, non-reloadable) available in EvaalAPI: | <b>8-10 September 2025</b> |
| • Proclamation of winners:   | <b>18 September 2025</b>   |

## Useful datasets and baselines

The Twelfth IPIN Competition Track 3 “Smartphone (offsite-online)” is using the same log file structure (with minor changes) since 2016. The full datasets and competition results are publicly available for those research teams and developers interested in evaluating their solutions on them:

- 2024 <https://zenodo.org/records/13931118> (same training and testing trials as in 2024!)
- 2023 <https://zenodo.org/records/8362205> (same training and testing trials as in 2024!)
- 2022 <https://zenodo.org/records/7612914>
- 2021 <https://zenodo.org/records/5948678>
- 2020 <https://zenodo.org/records/4314992>
- 2019 <https://zenodo.org/records/3606765>
- 2018 <https://zenodo.org/records/2791530>
- 2017 <https://zenodo.org/records/2823924>
- 2016 <https://zenodo.org/records/2823964>

Previous papers describing the competitions 2016-2022 are available in:

- Potorti, F.; Crivello, A.; Lee, S.; Vladimirov, B.; et al. Offsite evaluation of localization systems: criteria, systems and results from IPIN 2021-22 competitions IEEE Journal of Indoor and Seamless Positioning and Navigation Vol. 2, 2024. <https://doi.org/10.1109/JISPIN.2024.3355840>
- Potorti, F.; Torres-Sospedra, J.; Quezada-Gaibor, D.; Jiménez, A.R.; Seco, F.; Pérez-Navarro, A.; Ortiz, M. et al. Off-line Evaluation of Indoor Positioning Systems in Different Scenarios: The Experiences from IPIN 2020 Competition IEEE Sensors Journal, Early Access (in press), 2021. <https://doi.org/10.1109/JSEN.2021.3083149>
- Potorti, F.; Park, S.; Palumbo, F.; Girolami, M.; Barsocchi, P.; Lee, S.; Torres-Sospedra, J.; Jimenez Ruiz, A. R.; et al. The IPIN 2019 Indoor Localisation Competition - Description and Results IEEE Access Vol. 8, pp. 206674-206718, 2020. <https://doi.org/10.1109/ACCESS.2020.3037221>
- Renaudin, V.; Ortiz, M.; Perul, J.; Torres-Sospedra, J.; Ramón Jimenez, A.; Pérez-Navarro, A.; et al. Evaluating Indoor Positioning Systems in a Shopping Mall: The Lessons Learned from the IPIN 2018 Competition IEEE Access Vol. 7, pp. 148594--148628, 2019. <http://dx.doi.org/10.1109/ACCESS.2019.2944389>
- Torres-Sospedra, J.; Jiménez, A. R.; Moreira, A.; Lungenstrass, T.; Lu, W.-C.; Knauth, S.; Mendoza-Silva, G.M.; Seco, F.; Perez-Navarro, A.; Nicolau, M.J.; Costa, A.; Meneses, F.; Farina, J.; Morales, J.P.; Lu, W.-C.; Cheng, H.-T.; Yang, S.-S.; Fang, S.-H.; Chien, Y.-R. and Tsao, Y. Off-line evaluation of mobile-centric Indoor Positioning Systems: the experiences from the 2017 IPIN competition Sensors Vol. 18(2), 2018. <http://dx.doi.org/10.3390/s18020487>
- Torres-Sospedra, J.; Jiménez, A.; Knauth, A.; Moreira, A.; Beer, Y.; Fetzer, T.; Ta, V.-C.; Montoliu, R.; Seco, F.; Mendoza, G.; Belmonte, O.; Koukofikis, A.; Nicolau, M.J.; Costa, A.; Meneses, F.; Ebner, F.; Deinzer, F.; Vaufreydaz, D.; Dao, T.-K.; and Castelli, E. The Smartphone-based Off-Line Indoor Location Competition at IPIN 2016: Analysis and Future work Sensors Vol. 17(3), 2017. <http://dx.doi.org/10.3390/s17030557>

***Note: The datasets collected for the previous competitions correspond to evaluation areas in research centers in Arganda del Rey, Alcalá de Henares, Castellón and Badajoz (Spain), a Shopping Mall in Nantes (France), the CNR center in Pisa (Italy), a Library building in Castellón (Spain) and the School of Engineering in Guimarães (Portugal). Bear in mind that the training and testing trials for 2024 correspond to 2023! In 2025 we moved to a campus facility in Tampere (Finland)***

## GetSensorsData Suite and Tools

The GetSensorsData Suite is available to the community for its usage and improvement. The full description of the application used to collect the data, as well to get the calibrated maps, can be found below.

- Gutiérrez, J.D.; Jiménez, A.R.; Seco, F.; Álvarez, F.J.; Aguilera, T.; Torres-Sospedra, J.; Melchor, F.; GetSensorData: An extensible Android-based application for multi-sensor data registration SoftwareX (Elsevier) 19, 2022.  
<https://doi.org/10.1016/j.softx.2022.101186>
- Jiménez-Ruiz, A. R.; Seco, F.; and Torres-Sospedra, J. Tools for smartphone multi-sensor data registration and GT mapping for positioning applications Proceedings of the Tenth International Conference on Indoor Positioning and Indoor Navigation, 2019.  
<http://dx.doi.org/10.1109/IPIN.2019.8911784>

Please, get involved in the development of this evaluation framework and provide us your contributions through the GetSensorsData Suite GitHub project:

<https://gitlab.com/getsensordatasuite>

## Contact points and information

For any further question about the database and this competition track, please contact to:

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## Introduced changes

Version 1      May 23<sup>th</sup>

Preliminary Technical Annex