Call for papers

MuseKDE 2026: 1st Workshop on Multi-Sensor Trajectory Knowledge Discovery and Extraction (MuseKDE 2026)

Affiliated with the **27th IEEE International Conference on Mobile Data Management (MDM 2026)**

Key deadlines:

27 March, 2026	Submission of papers
15 April, 2026	Notification of acceptance
15 May, 2026	Camera-ready paper submission
29 June, 2026	Workshop day

Website: https://musit-project.eu/musekde-2026/

The rapid proliferation of tracking sensors, ranging from self-reporting systems to GPS, cameras, radars, and Earth observation, has led to unprecedented volumes of mobility data. However, these datasets are often fragmented, incomplete, and underutilized. Particularly, urban mobility and maritime surveillance generate massive, multi-modal datasets requiring advanced analytics. Subsequent Knowledge Discovery and Extraction (KDE) hinges entirely on the quality and integrity of the underlying trajectories, demanding innovative preprocessing and fusion methods. Therefore, developing robust, quality-aware analytical pipelines is paramount for generating trustworthy insights from such data streams. These advancements are crucial for applications such as sustainable urban planning and maritime situational awareness, which are vital components for achieving climate-neutral cities and effective ocean protection.

This workshop, Multi-Sensor Trajectory Knowledge Discovery and Extraction (MuseKDE), aims to bring together researchers and practitioners from academia and industry to discuss novel methodologies for knowledge discovery and extraction from multi-sensor trajectory data. Contributions should employ recent advances in deep learning, graph neural networks, attention-based models and other data-driven techniques to open new possibilities for trajectory representation and inference with fragmented or underutilized data. Particular attention will be placed on addressing the challenges of fusing data from heterogeneous sources and on cross-domain representation models.

MuseKDE seeks submissions of novel, high-quality research papers (maximum 6 pages long) that represent original work not previously published or currently under review elsewhere. Additionally, the workshop welcomes short and vision papers (2 - 4 pages) to promote discussion of ongoing work and future directions. Specifically, these papers may report on preliminary results

from ongoing research or propose conceptual frameworks for upcoming research efforts. Finally, the workshop will also put emphasis on FAIR principles and open datasets to create benchmark datasets and open-source tools.

The submission of tested solutions is highly encouraged. To evaluate their proposed research, participants can take advantage of some open mobility datasets provided by organizers, namely:

- MMDEC: Multimodal Maritime Dataset on the English Channel includes vessel tracks covering the western Celtic Sea, the English Channel, and a part of the North Sea over a three-month interval, complemented by several sensor data (including satellite imagery, weather data records and others). Available at https://zenodo.org/records/17491518.
- AegeaNET Syros AIS Dataset for Vessel Traffic Monitoring a collection of vessel activity of an extended area around the Cyclades in the Aegean Sea, Greece, spanning a continuous three-month period, encompassing peak maritime-traffic months in the region. Available at https://zenodo.org/records/17633792.

Topics of Interest

- Cross-domain representations for spatio-temporal data (image-based, graph-based, signals and time-series)
- Use of recommender systems approaches for trajectory analysis
- Trajectory data representation learning
- Semantic enrichment and context-aware trajectory modeling
- Spatio-Temporal graph and network analysis and embeddings for trajectories
- Generative AI for trajectory datasets
- Mobility foundation models
- Trajectory data mining, pattern analysis, and knowledge discovery
- Fusion of heterogeneous and multi-modal data sources (satellite, AIS, GPS, camera, RADAR, LiDAR)
- Trajectory reconstruction and inference
- Distributed processing for mobility data streams
- MLOps and cloud-based architectures for trajectory data mining
- Trajectory data applications for autonomous / robotic systems
- Benchmarking methods, evaluation metrics, and reproducibility in trajectory analytics
- Creation and sharing of FAIR open-access datasets
- Vessel monitoring of Illegal, Unreported, and Unregulated (IUU) fishing
- Vessel monitoring of dark vessels
- Sustainable urban mobility planning

Submission Guidelines

Accepted papers will be published in the **MDM 2026 Workshop Proceedings** and published by IEEE. Submitted papers must be original work that has not appeared in, and is not under consideration, for another conference or a journal. After being assessed for suitability by the workshop Chairs, all submitted papers will be single-blind peer-reviewed by the Program Committee members. Every submitted paper will be reviewed by at least three members of the Program Committee. Workshop papers may be up to 6 pages in the IEEE conference proceedings format. All submissions need to follow IEEE Computer Society Proceedings Manuscript Formatting Guidelines.

The templates can be found here: https://www.ieee.org/conferences/publishing/templates
Submissions will be received via EasyChair:
https://easychair.org/conferences/?conf=musekde2026

Please note that registering on the submission site with a title and meaningful abstract by the earliest deadline is required to enable the actual paper submission.

Organizers:

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Associate Professor Cyril Ray
Professor Dimitris Zissis
Dr. Alexandros Troupiotis-Kapeliaris
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