Call for Papers: ML-DE Workshop

The **[ML-DE] Workshop** on "*Machine Learning Meets Differential Equations: From Theory to Applications*", to be co-located with ECAI 2024, welcomes submissions that blend the latest advancements in Machine Learning (ML) and Differential Equations (DE). Our goal is to foster an environment where novel insights, methodologies, or applications at this interdisciplinary nexus can be shared and discussed.

For more information, visit our website: ML-DE Workshop ECAI 2024.

Publication Types

We invite submissions in the following formats:

- **Full-Length Papers:** Maximum of 8 pages, excluding references and supplementary material.
- **Extended Abstracts:** Limited to 2 pages, including references, designed for poster sessions and brief elevator pitches (approximately 5 minutes). This format provides a snapshot of your research, perfect for generating interest and discussion.
- **Presentation Only:** Authors of papers recently published in top-tier conferences and journals (JMLR, JAIR, MLJ, PAMI, IJCAI, NeurIPS, ICLR, AISTATS, ICML) are encouraged to submit a 2-page extended abstract, including references, for presentation. Please indicate the original publication venue in your submission form.
- **Reproducibility Track:**Contributions that enhance the reproducibility of research findings are crucial. We invite interactive tutorials/demos (e.g., Jupyter notebooks) or 2-page descriptions of libraries, packages and datasets. This track emphasizes the practical application and implementation of research, facilitating a deeper understanding and broader use of ML-DE techniques. Demo code (e.g. Jupyter notebooks etc.) will be published jointly at our github together with a link to the paper.

Highlights

- Publications will be in a volume by the Proceedings of Machine Learning Research (PMLR).
- Fast publication: 2 weeks after the workshop ended.

Topics of Interest

We encourage submissions across a broad range of topics, including, but not limited to:

- Embedding differential equations into machine learning (Neural ODEs, normalising flows, ...).
- Solving differential equations using machine learning (PINNs, Neural Operators, ...).
- Machine Learning-augmented numerical methods for solving differential equations (hybrid solvers, ...).
- Analysis of numerical methods for incorporating differential equations' solvers into machine learning algorithms (trade-offs, benchmarks, ...).
- Incorporation of expert-knowledge given by differential equations into machine learning algorithms (physics-inspired machine learning, ...).
- Applications of the above to modelling/predicting real-world systems in science and engineering (finance, biology, physics, chemistry, engineering, ...).
- Use of machine learning to model systems described by differential equations (finance, biology, physics, chemistry, engineering, ...).
- Approaches to extract physical knowledge out of learned differential equations for explainable AI (SINDy, ...).
- Computational efficiency of DE solvers involved in ML algorithms (ODE solvers, ...).

Submission Guidelines

- **Format:** Use the prefilled version on Overleaf or the official PMLR Template.
- **Length:** As specified by the submission format.
- **Double-Blind Review:** Submissions should not include identifiable information.
- **Submission Link:** https://chairingtool.com/conferences/MLDE24/MainTrack

Join Us in Person!

We warmly invite you to present your work in person, fostering a vibrant exchange of ideas. Note: We reserve the right to withdraw papers from our program and the PMLR for those that do not intend to present in person.

Important Dates

- Submission Deadline: 15th May 2024, 23:59 CEST
- Notification of Acceptance: 1st July 2024
- Workshop Date: Coming soon (19-20 October, Full Day). Please keep updated on https://mlde-ecai-2024.github.io/

For more details and submission instructions, please contact us at MLDEWorkshopECAI24@hsu-hh.de

We eagerly await your submissions and hope to see you in Santiago de Compostela for ECAI's 50th anniversary!