SUMMER SCHOOL 2025

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Advancing the Urban Flood Resilience using Artificial Intelligence: ARTIFACT Summer School 2025

As cities around the globe contend with the escalating challenges of urban flooding, exacerbated by climate change and rapid urban expansion, the need for sophisticated solutions has never been more critical. Building on current scientific knowledge, the **ARTIFACT** project will organise three annual Summer Schools to explores the application of advanced AI techniques and nature-based solutions related to flooding thus providing students, researchers, and professionals with the opportunity to deepen their understanding and strengthen their capacity to address these complex and evolving issues. This leaflet provides information about the first of these three schools.

About the ARTIFACT Project

ARTIFACT is an ambitious Horizon Europe, Twinning Green Deal project dedicated to enhancing urban flood resilience. By leveraging cutting-edge AI and sustainable practices, the project seeks to transform how cities predict, plan for, and respond to flooding events. In addition to advancing AI tools, the project also prioritizes the development of academic and research capacities to support sustainable urban flood management. For more information about the project visit www.artifact-project.com

ARTIFACT Summer School 2025: AI Tools for Modelling Urban Flood Risks

Driven by the need to prepare the next generation of researchers and professionals for the complexities of urban flood resilience, the ARTIFACT project is organizing a **free** Summer School from **June 30 to July 4, 2025**, at the **Institute for Artificial Intelligence Research and Development of Serbia** in Novi Sad, Serbia. This programme is designed to equip participants with the skills to utilize AI tools in modelling urban flood risks.

The curriculum includes two days of lectures (days 1-2) delivered by various experts and two days (days 3-4) of practical work done by the students in groups. At the end of day 4 students will present their group's work and results obtained.

Day 1 (June 30th):
Fundamentals of Physics-Based Flood Modeling

- Introduction to physics-based flood models
- Data collection and processing for building and calibrating flood models
- Flood modelling software

Prof. Dr Zoran Kapelan – TU Delft
Prof. Dr Zoran Vojinović – IHE Delft
Dr Natasa Manojlović – TUHH

Day 2 (July 1st):
Introduction to Deep Learning & Computer Vision & Remote Sensing Data for Flood Risk Management

- Deep learning models for flood risk management
- ML-based real-world applications for flood risk management
- Remount sensing data and real-world applications for flood detection

Dr Velibor Ilić – IVI
Dr Milan Dotlić – IVI

Day 3 (July 2nd):
Practical Applications (Part 1)

- Set up of the Python environment at participants laptops
- Group work on data preparation for flood modelling

Dr Velibor Ilić – IVI
Dr Veljko Prodanović – IVI
Dr Milan Stojković – IVI

Day 4 (July 3rd):
Practical Applications (Part 2)

- Group work on ML model tuning for flood modelling
- Group work on ML flood prediction
- Project presentations and Certification awards

Dr Velibor Ilić – IVI
Dr Veljko Prodanović – IVI
Dr Milan Stojković – IVI

Day 5 (July 4th)

***An additional day** will be dedicated to a field study to 3Lateral company (part of EPIC Games) specialising in 3D environment and character creation for gaming (3lateral: https://www.3lateral.com/). *More details about the visit will be provided soon.*

Location

The workshop will take place at the Institute for *Artificial Intelligence Research and Development of Serbia (IVI)*, **Fruškogorska 1, Novi Sad**. As a national research hub, IVI applies AI in fields like healthcare, visual computing, HCI, green tech, and intelligent manufacturing. Situated in Novi Sad, a vibrant Danube city known for its multicultural spirit, Petrovaradin Fortress, and rich art scene, IVI offers an inspiring environment for innovation and collaboration.

Join us

We invite students, researchers, and professionals in urban planning, environmental science, and AI to take part in this unique learning experience.

The programme offers:
- Understanding the AI concepts relevant to modelling of urban flood risks;
- Working on real-world problems through collaborative exercises or case studies;
- Collaborating with engineers and professionals by integrating AI into water management.

REGISTRATION

Registration can be done at:
https://artifact-project.com/knowledge-hub/-summer-school-2025-registration/

Please apply by **May 16, 2025** the latest. Available places are limited hence early registration is recommended.

*Note that registration is **free** and it includes the full academic programme and lunches provided on days 1-4 of the summer school. Travel and accommodation are self-funded.*

For further information, please contact the event organizers:
-Dr Milan Stojković milan.stojkovic@ivi.ac.rs
-Dr Veljko Prodanović veljko.prodanovic@ivi.ac.rs