

Welcome to the SUMMIT-EI

SUMMIT-EI – a premier event uniting minds and missions in intelligent technology for environmental intelligence

Dive into **innovative AI solutions** shaping the future of **energy, environment, infrastructure, and sustainability**.

Key themes include:

- ✓ **AI & Climate Change Solutions**
- ✓ **Infrastructural Health Monitoring**
- ✓ **Sustainable Infrastructure & Smart Cities**
- ✓ **Water Distribution & Resource Management**
- ✓ **Renewable Energy & Optimization**
- ✓ **Transportation and Urban Mobility**

Acknowledgments:

- 1) Environmental Intelligence (EI) Network
- 2) Department of Computer Science
- 3) Institute of Data Science and Artificial Intelligence

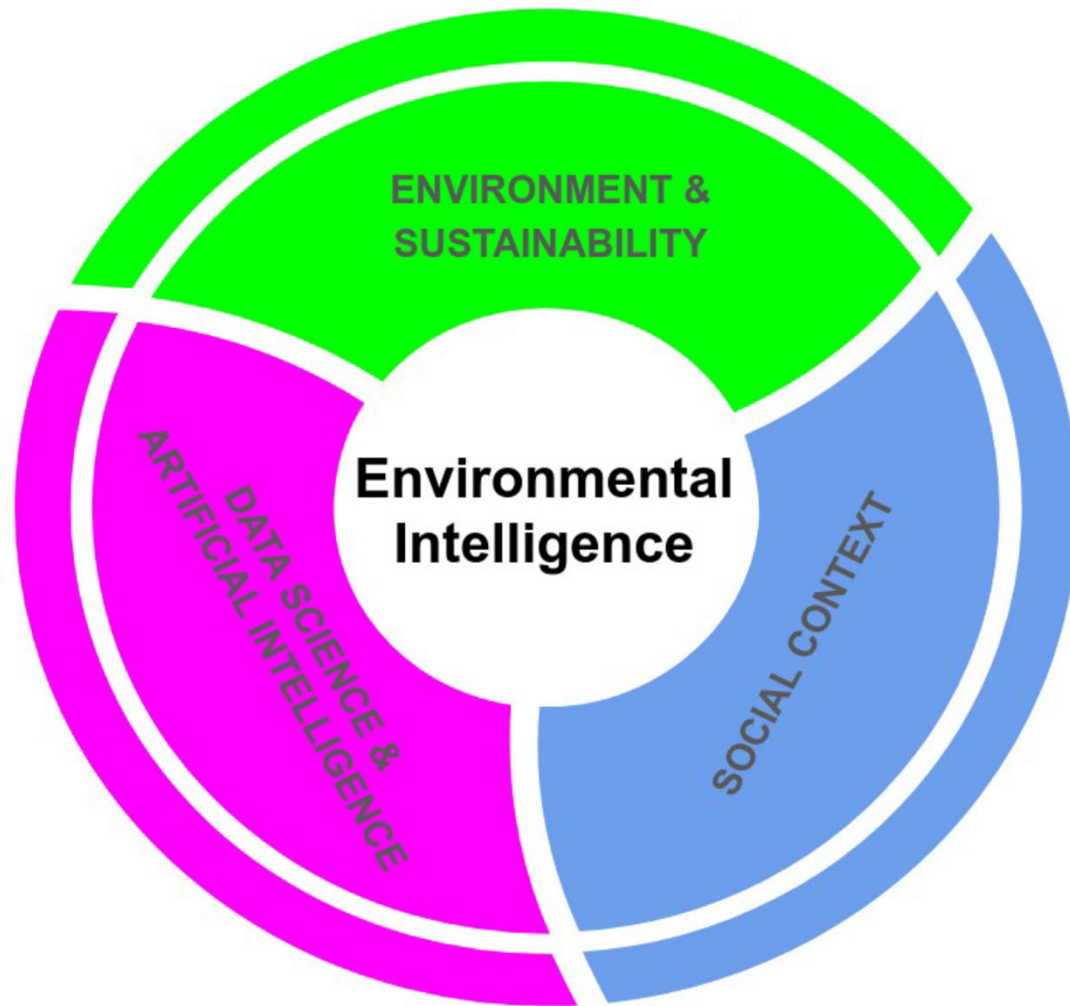


COMPUTER SCIENCE

Institute for Data Science and Artificial Intelligence

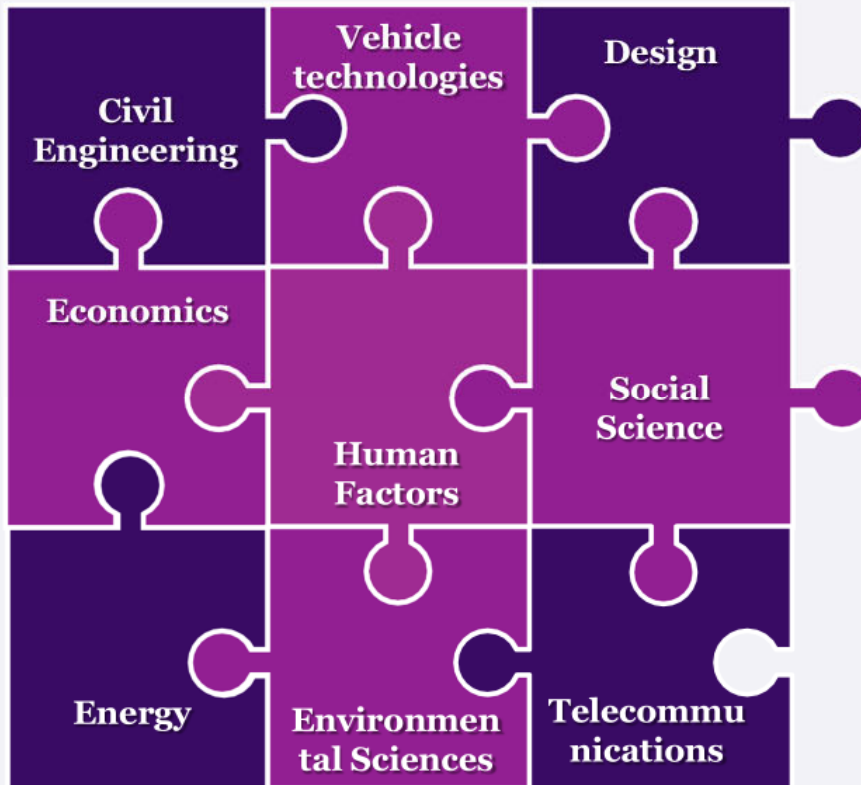
Environmental Intelligence
Research Network





“Using data
science and AI to
solve
environmental
challenges”

Interdisciplinary Approach



80+ academic staff members from all 9 Schools of Loughborough University, total £20m+ funded projects

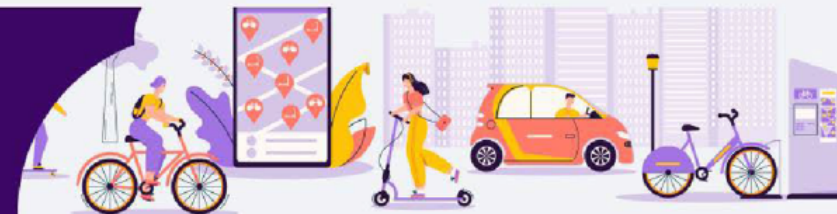
Our Vision:

To become a leading Centre of Excellence for advancing smart, safe, efficient, equitable, and sustainable transport



Loughborough University

lboro.ac.uk/traice

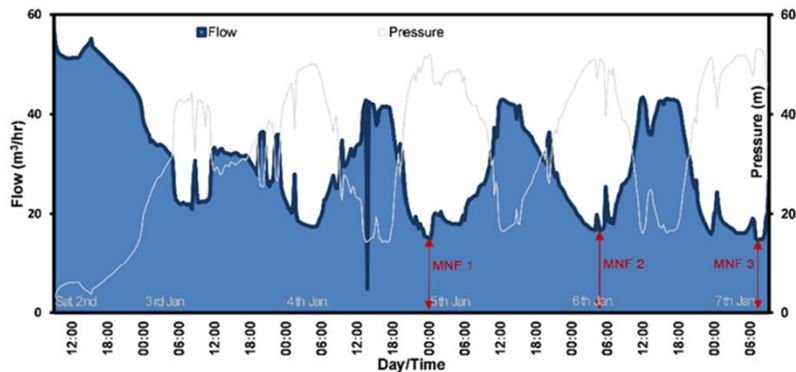




Reactive vs Proactive Approaches

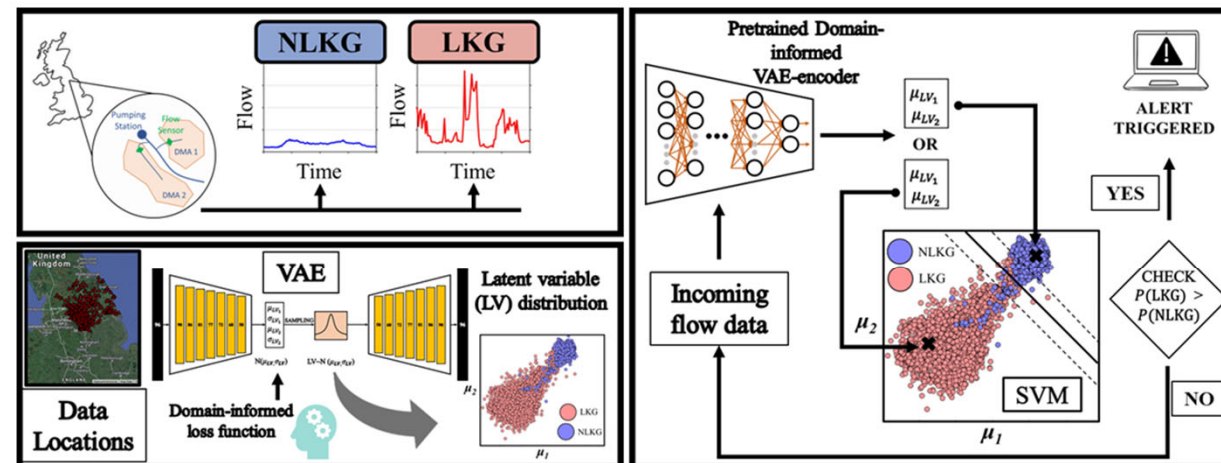


University of Exeter



- Current state of practice - **Minimum Night Flow (MNF)**
- MNF - average lowest recorded water flow typically between midnight and early morning - **7 to 14 days**
- If leakage occurs, $MNF > \text{pre-decided thresholds}$

- Previously proposed a **domain-informed variational autoencoder** and **support-vector-machines** based framework
- Uses flow recordings from **previous 1 day** to detect probability of leakage
- **Accuracy > 97%** for different test datasets



McMillan L., Fayaz J., and Varga L (2024). "Domain-Informed Variational Neural Networks and Support Vector Machines based Leakage Detection Framework to Augment Self-Healing in Water Distribution Networks". Water Research, Vol. 249, 120983

Meet Open Climate Fix



- Founded in 2019
- Non-profit product lab developing open-source AI solutions to decarbonise the electricity grid
- 40 years experience in AI and energy



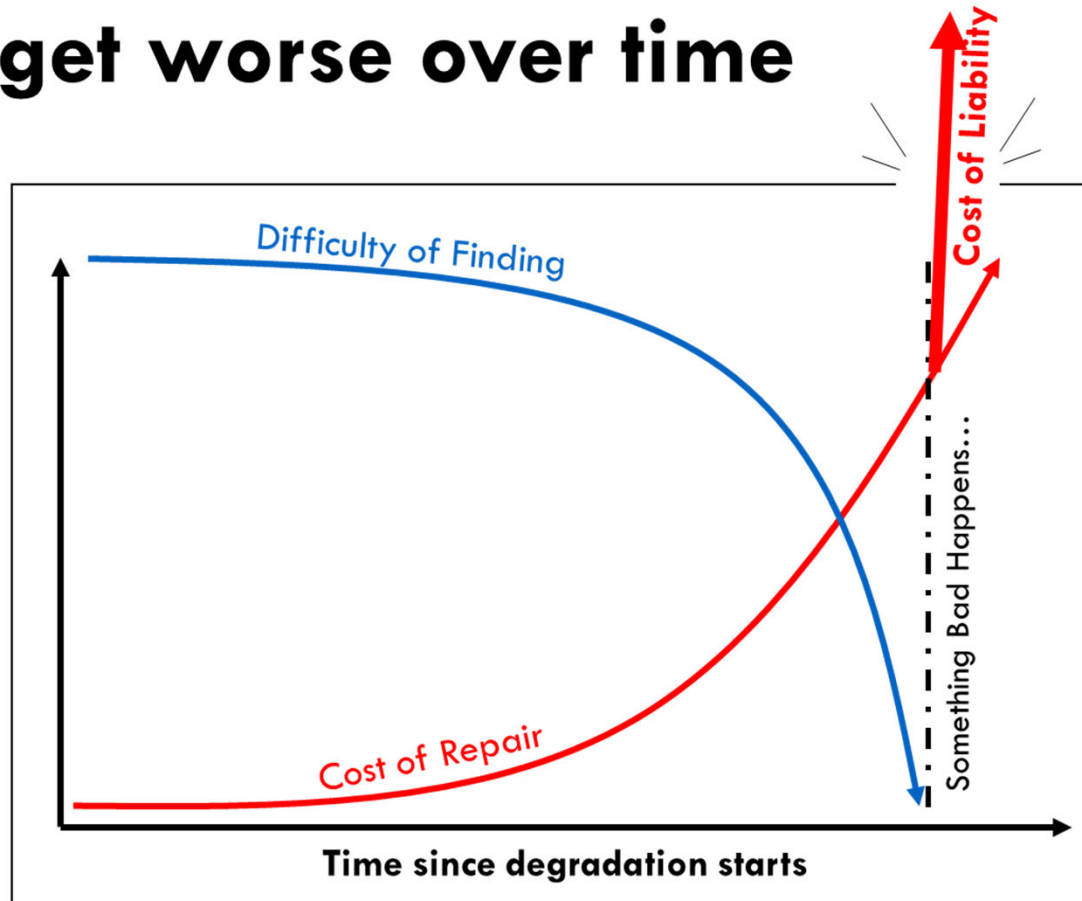
Shaping a future where people live and work sustainably with water

World-leading expertise



Underpinned by research and innovation

Defects get worse over time



Our Goals

EvoPhase⁺

Optimise Industrial Design and Processes using AI



Improve
efficiency of
designs



Reduce
energy
consumption



Reduce design
& processing
time



Reduce waste

Pathways for collaboration

Masters
projects

PhD
studentships

Contract
research /
consultancy



KTPs

UoE catalyst
funding

Collaborative
funding bids

Environmental Intelligence @ Exeter

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**Environmental Intelligence
Research Network**

