## **Special Issue**

## Generative AI for Smarter UAVs: Enhancing Reinforcement Learning Decision-Making

#### Message from the Guest Editors

Unmanned Aerial Vehicles (UAVs) are increasingly vital to modern communication networks, yet challenges in decision-making hinder their full potential. Reinforcement Learning (RL) offers promising solutions but faces limitations such as low sample efficiency and data scarcity, particularly in dynamic UAV environments. Diffusion Models (DMs), a class of generative AI, present a transformative approach by learning underlying data distributions and generating realistic synthetic data. This capability addresses RL's data scarcity and improves policy networks, enabling more effective decisionmaking in UAV communications. The integration of DMs with RL enhances UAV adaptability and real-time performance. DMs generate diverse synthetic data, improve policy networks, and create realistic simulation environments, overcoming RL's limitations. This Special Issue invites original research on integrating DMs with RL in UAV communications, focusing on innovative decision-making approaches.

#### **Guest Editors**

Dr. Yousef Emami Real-Time and Embedded Computing Systems Research Centre (CISTER), 4200-135 Porto, Portugal

Dr. Rahim Taheri Faculty of Technology, School of Computing, University of Portsmouth, Portsmouth, UK

Deadline for manuscript submissions

30 November 2025



## **Mathematics**

an Open Access Journal by MDPI

Impact Factor 2.2 CiteScore 4.6



mdpi.com/si/234907

Mathematics Editorial Office MDPI, Grosspeteranlage 5 4052 Basel, Switzerland Tel: +41 61 683 77 34 mathematics@mdpi.com

mdpi.com/journal/ mathematics



# Σ

## **Mathematics**

an Open Access Journal by MDPI

Impact Factor 2.2 CiteScore 4.6



mathematics



## About the Journal

## Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

#### Editor-in-Chief

Prof. Dr. Francisco Chiclana School of Computer Science and Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, UK

## **Author Benefits**

## High Visibility:

indexed within Scopus, SCIE (Web of Science), RePEc, and other databases.

#### Journal Rank:

JCR - Q1 (Mathematics) / CiteScore - Q1 (General Mathematics )

## **Rapid Publication:**

manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.4 days after submission; acceptance to publication is undertaken in 2.4 days (median values for papers published in this journal in the first half of 2025).