CS PhD Seminar Series

April 15th | 14:30-15:30 | Room 214

MiSo: a DSL for fast and robust MINIMIZE and SOLVE problems

Many problems in computer graphics can be formulated as finding the global minimum of a function subject to a set of non-linear constraints (MINIMIZE), or finding all solutions of a system of non-linear constraints (SOLVE). In this talk I will introduce MiSo, a domain-specific language and compiler for generating efficient C++ code for low-dimensional MINIMIZE and SOLVE problems, that uses interval methods to guarantee conservative results while using floating point arithmetic. MiSo-generated code shows competitive performance for several computer graphics problems, including high-order collision detection with non-linear trajectories, surface-surface intersection, and geometrical validity checks for finite element simulation.

Speaker: **Federico Sichetti**

Federico is a third year PhD student in Computer Science at the University of Genoa, where he obtained his BSc in Mathematics and MSc in Computer Science. He is working with prof. Enrico Puppo and prof. Daniele Panozzo (NYU) on robust geometry processing with applications to physical simulations.

From Radar to Rainfall: Enhancing Nowcasting with Deep Learning

The increasing availability of high-resolution weather data opens up new possibilities for improving short-term precipitation forecasts using deep learning. This seminar explores how data-driven models can learn from past radar observations to generate more accurate and timely rainfall nowcasts. The talk will share insights from model development and evaluation, focusing on key challenges such as spatial accuracy, temporal consistency, and forecast verification. This work contributes to the growing body of research at the intersection of machine learning and meteorology, with the aim of supporting more effective and reliable weather forecasting systems.

Speaker: **Manasa Mohan Pawar**

Manasa Mohan Pawar is a final-year Ph.D. candidate in Computer Science at the University of Genova, Italy. She earned her B.Tech in Computer Science from Gopalan College of Engineering, India, in 2019, and holds dual Master's degrees — one in Data Science from Amrita Vishwa Vidyapeetham, India, and another in Computer Science from Università degli Studi dell'Aquila, Italy.
Her research interests lie at the intersection of computer vision, machine learning, meteorology, and climate science. She is currently conducting her research at the Machine Learning Genoa (MaLGa) center, under the supervision of Prof. Nicoletta Noceti and Dr. Antonella Galizia (CNR-IMATI). Passionate about bridging machine learning and environmental science, her work aims to develop tools that contribute to climate resilience and data-informed decision-making.