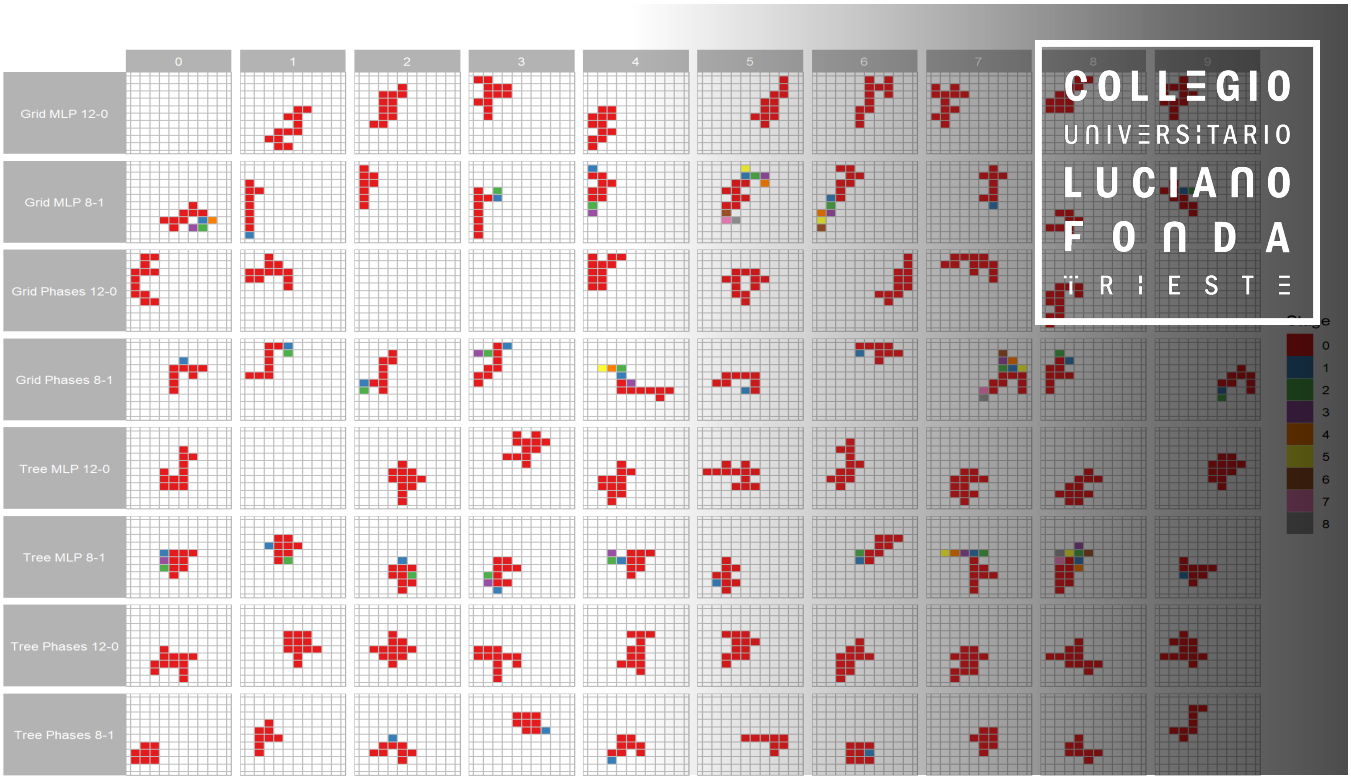

MEASURING AND FAVORING (BIO)DIVERSITY OF EVOLVED ROBOTIC AGENTS

Eric Medvet, UNIVERSITY OF TRIESTE

Monday 8 November 2021, at 6:30pm
Sala Conferenze, ex Ospedale Militare
Via Fabio Severo 40, Trieste and on Zoom

In many natural environments, there are different forms of living creatures that successfully accomplish the same task while being diverse in shape and behavior. This biodiversity is what made life capable of adapting to disrupting changes. Being able to reproduce biodiversity in non-biological agents, while still optimizing them for a particular task, might increase their applicability to scenarios where human response to unexpected changes is not possible. In this talk, we will focus on Voxel-based Soft Robots (VSRs), a form of robots that grants great freedom in the design of both body and controller and is hence promising in terms of biodiversity. We will show how to use evolutionary computation for optimizing, at the same time, body and controller of VSRs for the task of locomotion. We will discuss how to investigate experimentally whether three key factors—evolutionary algorithm (EA), representation, and environment—impact the emergence of biodiversity and if this occurs at the expense of effectiveness.