

Using Biological Diversity to Design the Robots of the Future

The tutorial presents an introduction to bio-inspired robotics from a biologist's viewpoint. It frames the question an engineer should ask a biologist to make certain that they are receiving the most effective transfer of biological principles. It covers the issues of biological discovery, scaling, constraint, selection, and complexity. It does so with examples from the research of the presenter on legged in locomotion. The lessons from biology include energy management, embodied control, and learning. The presentation concludes with the introduction of a new multi-university research initiative focusing on the science of learning, innovation, and control that is embodied (SLICE), ultimately aspiring to robotic squirrel-like capabilities.