Bio-Inspired Control and Learning in Cognitive Robot Systems

Jianwei Zhang

TAMS, University of Hamburg, Germany

In a dynamic and changing world, a robust and effective robot system must have adaptive behaviors, incrementally learnable skills and a high-level conceptual understanding of the world it inhabits. I will first show several developed platforms of intelligent service robot systems, e.g. in medical assistance, rehabilitation, home service, and edutainment, etc. I will then present the bio-inspired control of multi-joint modular robots, a multifinger hand and arm-hand systems based on artificial neural networks and reinforcement learning. Finally, I will introduce a framework for representing robot experiences, planning and learning which is used in the EU RACE project.