

New frontiers in robotics and AI

Today, robots are employed in restricted environments whose structural variability is strictly limited and represented in our systems by hand-crafted and pre-programmed rule sets. While hardware and control software have sufficiently matured over the last decades autonomous, unsupervised perception and cognition remain *THE* big challenges in robotics and AI. Brains are great in perception and cognition - still outperforming robots by far in most applications. Brains are able to use almost any kind of sensory modality (even artificial ones) and autonomously extract hierarchical layers of input representations. Only recently new bio-inspired approaches to brain-like computation have evolved and rekindled the rather old idea of neuronal processing models. Funding opportunities in the range of several billions have been raised by European and US American research agencies. In this talk I will give an overview of those new concepts, present my plan for the next 3-6 years of how to participate in this emerging field of neuromorphic computation and propose how mobile robots will have to make use of artificial brains to be rightfully called "intelligent".