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Developing a testbed for Swarmanoid

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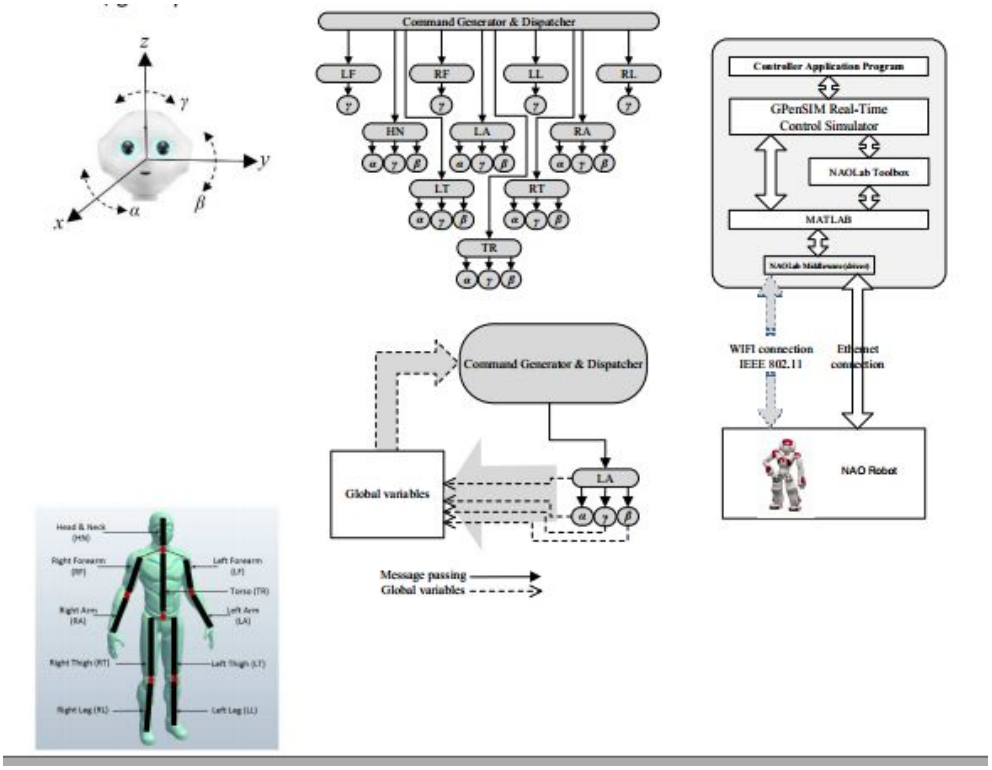
Abstract

This talk is meant as a presentation on the ongoing research on swarm humanoid robotics (swarmanoid) at the University of Stavanger, Norway. The swarmanoid we are going to discuss in this talk is limited to homogenous humanoid swarms. This talk will present some perspective on why this research is interesting and useful. Firstly, we start with a solitary humanoid and prepare it for swarm applications by regarding it as a discrete event system. Then, we represent it as a rigid body of ten interrelated links. Further, each link is modeled as an independent module, and then a command-dispatcher module is used to coordinate all these ten modules; thus, the command-dispatcher module acts as the brain of the humanoid. Secondly, various gait cycles (e.g. for walking, running, climbing stairs, etc.) are stored in the humanoid, making it capable of taking limited decentralized decisions, making state change based on external inputs. Thirdly, we discuss the possibilities for forming an intelligent swarmanoid by grouping non-intelligent humanoids. The first half of this talk is based on an award winning paper on modelling of humanoids. The second half presents ongoing research in developing a testbed for swarm humanoid robotics in order to try out different scheduling algorithms, swarm control policies, scalability, etc.

Keywords: Swarm humanoid robots (swarmanoid); discrete event systems; Petri Nets; GPenSIM; gait cycles



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