

Issues on software architecture to control humanoid robots over multiple middlewares and multiple robots

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Over the year the JRL and LAAS have developed a versatile architecture to build optimization problems related to whole-body control for humanoid robots. This architecture is based upon a graph of computational units communicating through time-dependent data. This graph is build and controlled through python, allowing rapid prototyping. This incremental software architecture is building upon continuous integration, and intensive testing both in simulation and in the real platform. It has been integrated into several middlewares, namely CORBA, ROS, and OpenRTM, and for several robots (HRP-2, Romeo and PR-2). A special focus will be given on the technical issue of implementing real-time model predictive control and its impact on software architecture.