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ORCHESTRATING SYMBIOSIS: CREATING A FRAMEWORK FOR SHARED CONTROL

Abstract

The ability to orchestrate symbiosis by creating a framework for shared control between humans, robots, and advanced autonoma is a necessary and tractable antecedent to successful Management Operations Control Architecture (MOCA) applications. Developing a means of articulating the same from different perspectives and disciplines (e.g., game theory, control theory, cultural anthropology and psychology, computer science, and systems engineering) can be a foundation for qualitative and quantitative inference essential for MOCA applications. This is an n-dimensional interaction problem (i.e., an arbitrary number of objects interacting in an arbitrary number of ways). Multiple problem spaces (i.e., applications) exist that present as different subsets of n-dimensional interaction-type problems that exacerbate the situation by requiring near real-time solutions in many instances. The bottom line is that reality is not a convenient problem or solution space . . .

As we design and develop infrastructure that requires a shared and mutable locus of control, we must include a framework that provides a moral compass based on understanding. This body of work has the potential to transform the discussion of the apocalyptic metric probability of doom due to malevolent Artificial General Intelligence (AGI) expressed as p(doom) into an alternative quest for solution spaces that offer the highest probability of yielding desirable future outcomes.

Posit instead that Utility U is the measure of the value proposition for a state of a system-of-systems that exists in a characterizable known system state matrix at time t(0) within varying degrees of certainty, subject to a matrix of operators of arbitrary dimensions for which each element has some probability of action as time varies from t(0) to t(n) where n can range from 1 to infinity. This describes an n-dimensional interaction problem where (Items (Attributes (Values))), and the summation of terms is a form of a master equation. The dimensionality required is a function of the complexity of the flow variables (i.e., matter, energy, and data) and the interface relationships necessary to characterize the state of the system of systems. This expansion can be described as a recoverable function consisting of an arbitrary number of terms that characterize the state transitions from t(0) to any time t(n), for which minima, maxima, or equilibrium limits can be calculated. In practice, calculating the same requires the propagation of operators (e.g., constraints, boundary conditions, symmetry) to occur faster than the problem space changes and within the computational resources' ability to posit the solution space.