

Multi Agent Based Pre-Hospital Emergency Management Architecture

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Abstract : Managing pre-hospital emergency patients requires real-time practices and efficient resource utilization. Since we are facing a distributed Network of healthcare providers, services and applications choosing the right resources and treatment protocol considering patient situation is a critical task. Delivering care to emergency patients at right time and with the suitable treatment settings can save ones live and prevent further complication. In recent years Multi Agent Systems (MAS) introduced great solutions to deal with real-time, distributed and complicated problems. In this paper we propose a multi agent based pre-hospital emergency management architecture in order to manage coordination, collaboration, treatment protocol and healthcare provider selection between different parties in pre-hospital emergency in a self-organizing manner. We used AnyLogic Agent Based Modeling (ABM) tool in order to simulate our proposed architecture. We have analyzed and described the functionality of EMS center, Ambulance, Consultation Center, EHR Repository and Quality of Care Monitoring as main collaborating agents. Future work includes implementation of the proposed architecture and evaluation of its impact on patient quality of care improvement.

Keywords : multi agent systems, pre-hospital emergency, simulation, software architecture

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