

## Knowledge Reactor: A Contextual Computing Work in Progress for Eldercare

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**Abstract :** The world-wide population of people over 60 years of age is growing rapidly. The explosion is placing increasingly onerous demands on individual families, multiple industries and entire countries. Current, human-intensive approaches to eldercare are not sustainable, but IoT and AI technologies can help. The Knowledge Reactor (KR) is a contextual, data fusion engine built to address this and other similar problems. It fuses and centralizes IoT and System of Record/Engagement data into a reactive knowledge graph. Cognitive applications and services are constructed with its multiagent architecture. The KR can scale-up and scaledown, because it exploits container-based, horizontally scalable services for graph store (JanusGraph) and pub-sub (Kafka) technologies. While the KR can be applied to many domains that require IoT and AI technologies, this paper describes how the KR specifically supports the challenging domain of cognitive eldercare. Rule- and machine learning-based analytics infer activities of daily living from IoT sensor readings. KR scalability, adaptability, flexibility and usability are demonstrated.

**Keywords :** ambient sensing, AI, artificial intelligence, eldercare, IoT, internet of things, knowledge graph

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