

# Software Engineering Formal Specification Methodology in Augmented and Virtual Reality Environments

A Proposal

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***Abstract***—Software engineering seeks to move software development from mainly creative processes into a true engineering discipline. A number of promising approaches have emerged and adapted in the productive domain. One approach is the use of formal specification techniques in software development. Formal specification addresses the use of rigorous models of a software system for the purpose of analysis to identify incorrect or missing specification requirements. Formal specification can be applied at various stages of the software development lifecycle. A growing trend in the established engineering fields is the use of augmented and virtual reality tools to aid in the design, development of products. It is of research interest, for the technologies of augmented and virtual realities to be used in software development. The work presented herein, proposes the use of augmented and virtual reality approaches to advance the use of formal specification in software engineering. In this work, a safety-critical software engineering methodology is proposed that implements formal specification verification and validation through the use of augmented and virtual reality environments. The proposed framework simulates the safety-critical mechanism in operation and augments the view with the execution of the formal specification; permitting the identification of undesired system states.