TITLE: Guidelines for the Verification and Validation of AI Systems

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ABSTRACT:

A comprehensive set of V&V guidelines are provided for 28 different AI system development situations. Of these, 27 are based on the combinations of 3 three-valued factors; the phases of the developmental lifecycle (requirements, design, and implementation) the types of system components (knowledge structures, high reusable components, and others), and levels of stringent V&V (classes 1, 2, and 3, based on complexity and integrity factors). A single last guideline is provided for the maintenance phase.

For each situation a set of recommended V&V techniques are organized into a suggested V&V plan given for each technique and the target of the technique, the measurements to be taken, the past fail criteria, and literature references. A total of 31 techniques are recommended overall. Detailed guideline procedures are provided for those 18 judged most important.