# Incremental Software Development Method based on Abstract Interpretaion

Nobukazu Yoshioka
Japan Advanced Institute of Science and Technology

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## Abstract

Stepwise Refinement is a well-known effective method for developing a large and complex software product. In traditional methods, a program is refined with respect to its function and the method is only applied in its design phase. In consequence, data defined at each step is too abstract to allow its execution and it is hard to find design errors by executing design artifacts.

In this paper, we propose a method: Incremental Software development method based on Data Reification (ISDR), in which a program is refined from its data reification point of view and can be executed using Abstract Interpretation. One of the advantages of ISDR is that we can interpret intermediate programs which are not finished completely, so that errors can be detected at an earlier stage of software development than in traditional methods. In addition, we design CASE and tool based on ISDR to solve practical problems and explore the ability.

**Key Words:** **Abstract Interpretation, Stepwise Refinement, Formal Methods, Incremental Programming,prototyping**