An approach towards building human behavior models automatically by observation

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Abstract
Modeling human behavior could be complicated and expensive. To be able to reduce these costs, new methodologies and tools must be developed that automate the creation of building human behavior models. We describe in this paper one way to accomplish this through the use of Genetic Programming in conjunction with Context-Based Reasoning (CxBR). Context-Based Reasoning is based on the concept that humans think and act in terms of contexts. This approach has been proven to work well in simulated environments. Genetic Programming (GP) addresses computer programs that evolve new, better programs by themselves, i.e. automatic programming. GP will genetically breed a population of computer programs using operations and selection mechanisms inspired by Darwin's evolution theory. The result of the genetic process is a computer program that will solve most types of predefined problems in almost any area such as classification, planning, mathematics, optimizing or control. This paper presents a new approach for automatically creating human behavior models. To automate the creation process, learning from observation is used. This strategy learns the behavior of a subject matter expert by merely observing his behavior. The need for a methodology like this has already been identified for some applications, e.g. after-action-review programs, modeling human behavior in battlefield simulations and in street traffic flow simulators.