Abstract

In society the autonomous vehicles are beginning to operate in near future. All participants of the society are required to follow some specific laws and regulation. So as a part of society autonomous system cannot be an exception. Soon the co-ordinated multiple autonomous vehicles in the form of convoys or platoons are expected on our highways. However the behavior of these platoons must be checked. Certainly an autonomous system will find itself in a position where it needs to make choice between either to follow a rule or not, but also it has to go through a complex ethical decision making. However there is no evident way to implement the human understanding of ethical behavior in autonomous system. Even if we make autonomous system to make differences between more or less ethical choices, how can we belief or trust that the system will choose the right one? A pertinent representation of vehicle platooning is as a multi-agent system in which each agent captures the "autonomous decisions" carried out by each vehicle. In order to make sure that these autonomous decision-making agents in vehicle platooning never violates the specific rule of behavior. We take the autonomous systems with hybrid architecture in which rational (BDI) agent execute the highest level reasoning. Formal verification is used for this type of system successfully to prove that specific rules of behavior are kept in notice when making decisions. We propose an abstract framework for ethical plan selection that can be formally verified. We implement a rational agent that integrate a given ethical policy in its plan selection and show that we can formally verify that the agent choose to execute the most ethical available plan best to its belief.