Performance of cognitive agents' simple observational learning strategies in crossing a highway

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We study the performance of simple observational social learning strategies used by cognitive agents in making decisions while attempting to cross a cellular automaton based highway, when an incoming vehicle is suddenly observed. The cognitive agent could represent an autonomous vehicle, a robot, a driver, a pedestrian, or an animal. We assume that an agent faced with such situation has a knowledge about the types of decisions (and their consequences) made by other agents in similar situations in the past. In their decision-making, the cognitive agents use the simple strategy of mimicking what succeeded and avoiding what failed in the past. Our work focuses on simplicity of the learning algorithms and we investigate the learning performance of two decision-making processes. We consider homogeneous and heterogeneous (i.e., containing risk takers and risk avoiders) populations of cognitive agents operating under various highway traffic conditions. We discussed selected simulation results and provide their statistical analysis.