The world is inherently multiagent. AI has a rich tradition of study of multiagent systems. In this talk, I will present work that utilizes multiagent AI models to solve pressing real world problems in public safety and better modelling of human-decision making systems. In particular, I will describe modeling of adversarial interaction using Stackelberg games and applications to public safety and security. I will focus on a model that I developed called threat screening game, which was tested at some US airports for screening passengers. I will also present novel techniques in optimization used for solving this game, as well as a repeated version of threat screening that is solved using reinforcement learning. The reinforcement learning approach introduces a novel technique of enforcing hard constraints on neural network outputs.

In another topic in multiagent systems, I will talk about my effort to build high fidelity simulators of human decision-making systems using deep generative models. These simulators can help learn better policies and decisions for the real world. Overall, multiagent reasoning in AI is key to solving many real world problems.

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