

## PART V

### MULTIAGENT SYSTEMS

Up to this point, we have focused on decision making from the perspective of a single agent. We now extend the core concepts that we have discussed so far to problems involving multiple agents. In multiagent systems, we can model other agents as potential allies or adversaries and adapt accordingly over time. These problems are inherently challenging due to complexities surrounding agent interactions and agents reasoning about other agents who reason about the agent, and so on. We begin by introducing multiagent reasoning in games and outline how to compute equilibria from simple interactions. We then discuss how to design algorithms for multiple agents interacting over time, describing learning algorithms that favor rational adaptation over convergence to equilibria. Introducing state uncertainty significantly increases problem complexity, and this part emphasizes the resulting challenges. The final chapter focuses on the various models and algorithms for collaborative agents that strive to work together with a common objective.