Natural Language Generation (NLG) systems in situated domains face a number of decisions concerning what to communicate to a human user, how to structure their content and how to express it. Traditionally, these decisions have been addressed sequentially and in isolation of each other.  Recent studies however have shown that they are strictly interdependent and that an isolated treatment can deteriorate the overall performance of systems.

In this talk, I will argue for a joint learning framework for situated NLG that is based on Hierarchical Reinforcement Learning and can be augmented with graphical models. I will discuss a human evaluation study that compares two systems that guide users through a virtual 3D environment: one using a jointly optimised policy and one using a policy optimised in isolation. Results show that the jointly optimised policy outperforms its isolated counterpart in terms of task success, user satisfaction and similarity with human authors.