

Mobile Robot Teleoperation Augmented with Prediction and Path-Planning

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Abstract: This paper proposes a control scheme for teleoperation of mobile robots in the presence of time delay. The global goal and the remote environment are unknown. The control system generates a collision-free reference from the commands issued by the operator and gives it to a remote stable controller driving the robot. Such reference is computed by using a predictor and a path planner, both placed on the remote site. The operator receives visual feedback from the remote site. In addition, a variable sampling of the operator's commands is proposed that emulates the strategy *move and wait*. Finally, the stability of the designed teleoperation system is analyzed and the behavior of the system is tested experimentally.

Keywords: teleoperation, mobile robots, path-planning, prediction methods, non-linear control systems.
