

SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 3 (2C)

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TECHNOLOGIES AND TECHNIQUES FOR LUNAR PROSPECTING: SUMMARY OF FIELD
STUDY RESULTS**Abstract**

Here we present the summary of results from a field study to assess technologies and techniques for direct-driven tele-operation of a lunar prospecting rover. The primary objectives of the Summer 2014 field study are to study human operated performance in a time-delayed, direct-drive harsh-lighting setting - analagous to tele-operating a rover at the lunar poles. The following elements are considered: time-to-complete a set driving course; time-to-complete an exploration goal; ideal daylight operating conditions as compared to harsh lunar-like operating conditions; fixed time-delayed tele-operations compared to variable time-delayed tele-operations and no time-delayed tele-operations; and nominal data rates compared to restricted Moon-Earth data rates. A secondary objective is intended to address mapping the rover's path tracking and mapping. The following elements will be considered: collecting velocimetry data from both monocular camera and 3D IR cameras to compare accuracy in even and rough terrain conditions; and implementing the modified-SLAM approach for tele-operating the rover in the lunar-like conditions, ideal unstructured conditions, and controlled indoor conditions.