



### Team for development of Intelligent Exploration Drill

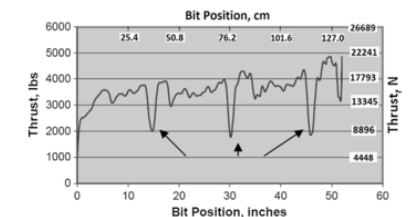
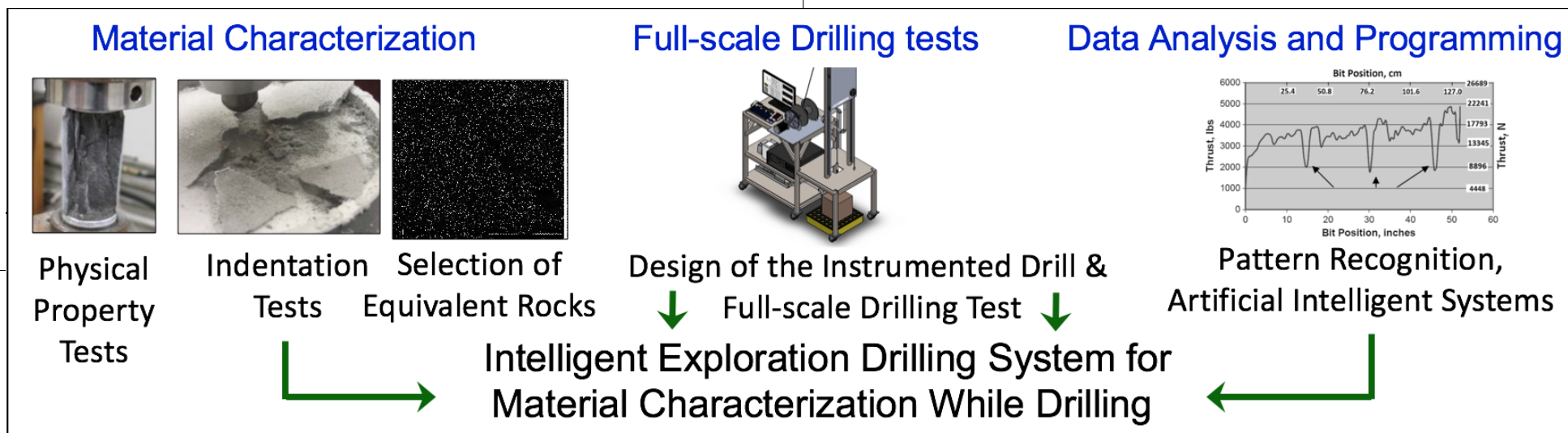
- PI: Jamal Rostami, EMI, Mining, dept. Colorado School of Mines (CSM)
- Co-I: Alfred Eustes III, Petroleum Eng. (CSM)
- Co-I: Chris Dreyer, Center for Space Resources (CSR-CSM)
- Graduate Student: PhD candidate to be named,
- Subcontractor: Steve Nieczkoski, Thermal Space Ltd.

**Objective:** Development of an intelligent drilling system capable of material characterization while drilling for exploration of various formations on Moon/Mars

**Concept:** Design of an instrumented drill to monitor drilling parameters and using a pattern recognition to identify and characterize various formations.

**Start:** TRL 1 Characterization of frozen simulant

**End:** TRL 3 Full scale drilling in different materials and training the drilling unit for identifying various layers



### Approach/Objectives:

- Material characterization including physical properties of frozen regolith
- Developing intelligent, light-weight, instrumented drill
- Full-scale drilling tests and monitoring drilling parameters, preliminary evaluation of data
- Use of Artificial Intelligence/Pattern Recognition for identification of the material

### Potential Impact

- Enabling geotechnical and lithological shallow depth exploration of the Moon/Mars
- Identification of various formations for space mining and construction
- Contribute to establishing bases on Moon/Mars