# List of Figures

***Fig. 1-1****. Explorer 1systems and subsystems architecture.*

***Fig. 1-2****. Explorer 1standard configuration*

***Fig. 3-1****. EX1 deployed configuration top and side views*

***Fig. 3-2****. EX1 deployed configuration front and rear views.*

***Fig. 3-3****. EX1 mechanically-hybrid suspension design.*

***Fig. 3-4.*** *Low-Travel Suspension (LTS) design.*

***Fig. 3-5.*** *Navigation Mast (NAVMAST).*

***Fig. 3-6****. Service Module (SVM).*

***Fig.4-1****. NVIDIA Jetson TX2.*

***Fig. 4-2.*** *NVIDIA Jetson Nano.*

***Fig. 4-3.*** *Hibot (a) motor controller and (b) motor driver units.*

***Fig. 4-4.*** *3D view of the Rocker Interface Unit (RIU).*

***Fig. 4-5.*** *Top view and individual connectors of the Rocker Interface Unit (RIU).*

***Fig. 4-6.*** *Schematic of the current sensing bridge built into the RIU.*

***Fig. 4-7.*** *Connectivity diagram for half of the Rocker Interface Unit (RIU), i.e., all the modules for one single rocker.*

***Fig. 4-8****. Schematic of the Lights Control Board (LCB) circit.*

***Fig. 4-9.*** *Lights Control Board (LCB).*

***Fig. 4-10.*** *IMU sensor module.*

***Fig. 5-1****. EX1 power system architecture.*

***Fig. 5-2.*** *Power Supply Unit (PSU).*

***Fig. 5-3.*** *Power Distribution Unit (PDU) 3D and top views.*

***Fig. 6-1.*** *ROS node graph of the central OS.*

***Fig. 6-2.*** *Working principle of an H-bridge.*

***Fig. 6-3.*** *Different command signals applied to the H-bridge and their effect.*

***Fig. 6-4****. Speed control with consecutive step commands for two different frequencies of operation.*

***Fig. 6-5****. Position control with consecutive step commands for two different frequencies of operation.*

***Fig. 6-6.*** *Overview of the high-level functions implemented in the low-level software*.

***Fig. 7-1.*** *Simplified communication system architecture.*

***Fig. 7-2.*** *How a FIFO ring works.*

***Fig. 8-1.*** *Reference image of EX1 back panel.*

***Fig. 8-2.*** *Fake screw sign.*

***Fig. 8-3.*** *EX1 wheel exploded view.*

***Fig. 8-4.*** *EX1 Low-travel suspension (LTS) exploded view.*

***Fig. 8-5.*** *EX1 joystick reference for teleoperation.*