Hardware List

Following are the names and brief descriptions of the hardware used throughout the project:

* Prusa 3D Printers
  + A variety of Prusa 3D printer models were available for use. Used for rapid prototyping of routing end-effector models.
  + Available in the 3D printing and mechatronics labs in the 405 building at the University of Auckland. Requires training.
* Universal Robots UR5e Robot Arm
  + A mid-size robot arm which is simple to program. Used for initial testing of routing end-effector prototypes.
  + Available in the robot cell in the mechatronics lab in the 405 building at University of Auckland. Requires training.
  + Manual included.
* KUKA KR16 Robot Arm
  + A mid to large size robot arm which will be used in real-world application. Not used in this project.
  + Available in the robot cell in the mechatronics lab in the 405 building at University of Auckland. Requires training.
  + Technical specs included.
  + Serial number: 859871.
* NEMA17 Stepper Motor
  + A stepper motor for accurate and precise motor control. Used for feeding a cable for routing.
  + Available at request from technicians in the mechatronics lab in the 405 building at University of Auckland.
  + Technical specs included.
* DRV8825 Stepper Motor Driver
  + A motor driver for interfacing stepper motors to control circuits. Used for driving the NEMA17 stepper motor.
  + Available at request from technicians in the mechatronics lab in the 405 building at University of Auckland.
  + Technical specs included.
* Arduino Uno Rev3
  + A microcontroller to control stepper motor function. Used for controlling the NEMA17 stepper motor.
  + Available at request from technicians in the mechatronics lab in the 405 building at University of Auckland.
  + Schematic included.
* KINGSING KS-W1022 Multi-Core Cable and Stripping Machine
  + A stripping machine which can cut cables to length, automatically strip outer sheaths and core insulations. Used for stripping and cutting multi-core cable to the desired lengths for routing.
  + Bought by ZURU Tech for project use.
  + Manual Included.
* Sample Wall
  + A sample wall fabricated from MDF for testing of routing function.
  + Available in the mechatronics lab in the 405 building at University of Auckland or for request by engineering workshop technicians.
* Multi-Core Cables
  + Electrical cables to be routed into channels. Variety of 3-solid-core power cables and 4-stranded-core data cables.
  + Purchased by the technicians of the mechatronics lab in the 405 building at University of Auckland.
  + Specification in directory “\3. Cable Stripping Methods\Criteria”
* Consumables (by use)
  + Stepper motor circuit
    - Breadboard
    - Jumper wires
    - Capacitor
  + Routing end-effector prototypes
    - Threaded rods
    - Bolts
    - Machine screws
    - Socket screws
    - Nuts
    - Threaded inserts
    - Ball bearings
    - PLA filament
    - Elastic bands
* Workshop Tools
  + Soldering iron station
  + DC Power source
  + Multimeter
  + Manual wire stripper
  + Side cutters
  + Drill
  + Mallet
  + Hacksaw
  + Files
  + Screwdrivers
  + Allen keys
  + Spenners
  + Pliers
  + Vernier caliper
  + Utility knife
  + Scraper
  + PPE