Electrical Training

Week 4: EAGLE Part 1

Agenda

- EAGLE Introduction
- Training Board Overview
- EAGLE Structure

EAGLE Introduction

Install EAGLE

1. Go to this link: www.autodesk.com/education/free-software/eagle
2. Create an Autodesk education account with GT email
3. Return to the link with the credentials
4. Sign in and download the software for your OS

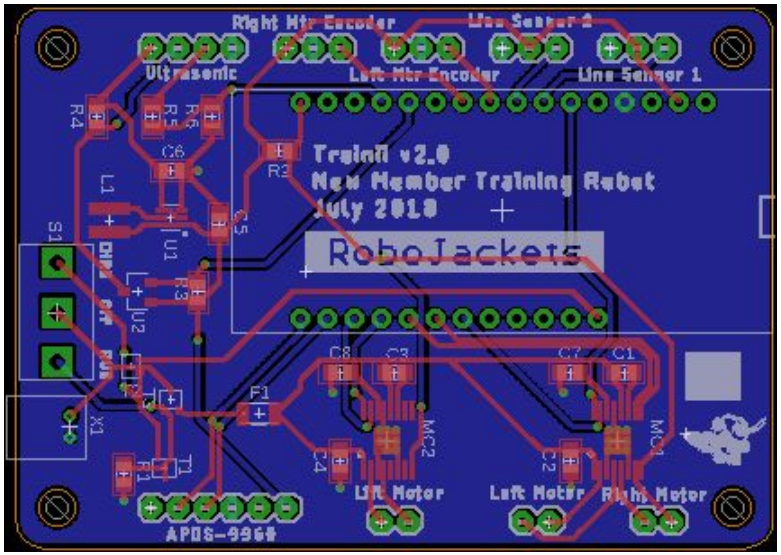
What is EAGLE?

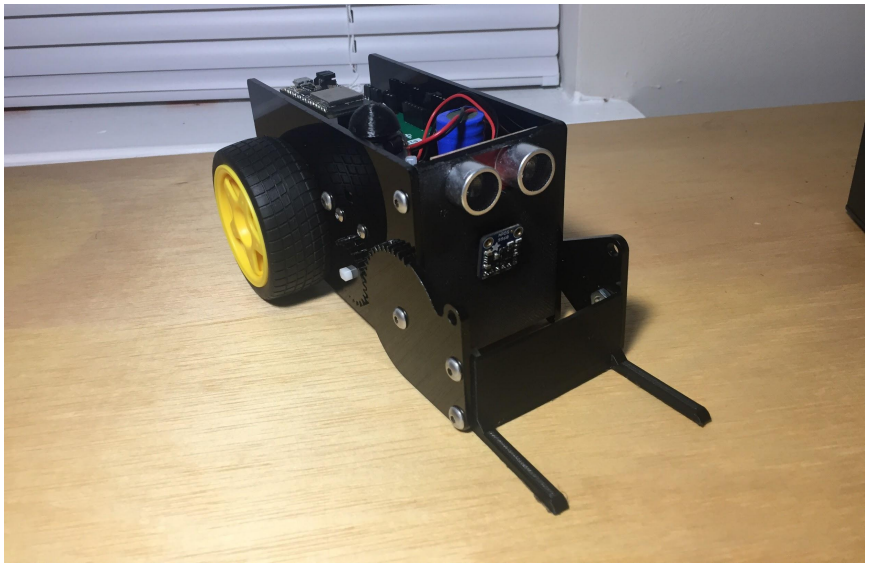
- Eagle is a PCB design software
  - Printed Circuit Boards support and connect electrical components in a condense package
- Consists of tools that make a board file that can be sent to a PCB manufacturer

Training Board Overview

Purpose of Board

- Control board to interface with the software training system
- Replaces the Huzzah32 used for control





Functions of the Board

- Locomotion
  - Two drive motors
  - A lift motor
- Sensors
  - Two line sensors
  - Two encoders
  - An ultrasonic distance sensor
  - A gesture sensor

EAGLE Structure

EAGLE Structure

- Part Libraries (this week)
  - Contain components to be added to schematic and board
- Eagle Schematic (this week)
  - Diagram all parts and connections that will go on the board
- Eagle Board Layout (next week)
  - Laying out parts from the schematic and routing connections

Part Libraries

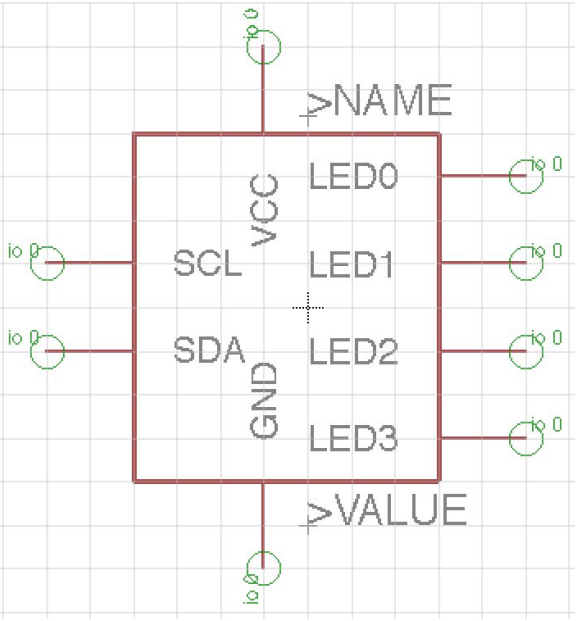
- Store information about parts used in schematic and board layout
- Eagle comes with some but you often need to make your own
- Broken down into three categories
  - Symbol
  - Footprint/Package
  - Device

Part Libraries Cont.

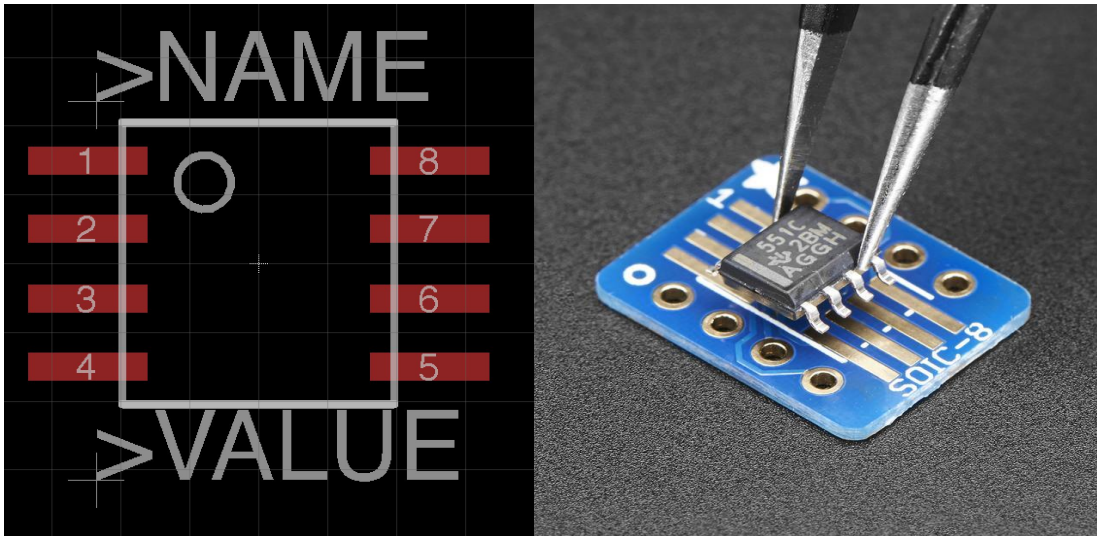
- Symbol
  - What is seen in the schematic
- Footprint (prev. known as Package)
  - Arrangement of pads and holes used for soldering onto the board
- Device
  - Brings symbol(s) and footprint(s) together

Part Libraries Cont.

Symbol



Package



Schematic

- How we organize the board to see the parts used and the connections between them
  - Add components that will go on the PCB
  - Make electrical connections between these components
- Used by Eagle to help you create a board layout that functions as defined

Example Schematics