**PROJECT DOCUMENT**

**Subject: Embedded System Hardware Design**

**Project: Speed control for Stepper motor and DC motor**

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# Objectives

* Acquire the skills to:
* Design a 2 layer Printed Circuit Board (PCB).
* Manufacture the PCB
* Order Components
* Populate PCB
* Test board.
* Learn to use Altium schematic capture and PCB layout software.
* Code a way to control the precise speed of DC motor

# Scope of the project

* Used Altium to create the PCB design and then code the STM32 to control the speed of DC motor using feedback from the encoder.

# Estimate Cost breakdown

PCB Project Cost Breakdown

* Component
* JLusion WiFi Scope (Scope, stand, USB): $53.99
* Terminal Block Adapter: $2.88
* 17HS4401 Stepper Motor: $28.64
* DC Motor with Encoder: $18.03
* LV8712T Motor Driver Board: $1.51
* OLED Display: $10.00
* Manufacture PCB: 5$ ([Link](https://www.nextpcb.com/pcb-quote?layer=2&length=100&width=150&count=5#/pcb-quote?layer=2&length=100&width=150&count=5))

# Block diagram

A computer screen with white rectangles

Description automatically generated

Figure 4‑1: Block diagram'

# Software Design

**REFERENCES**