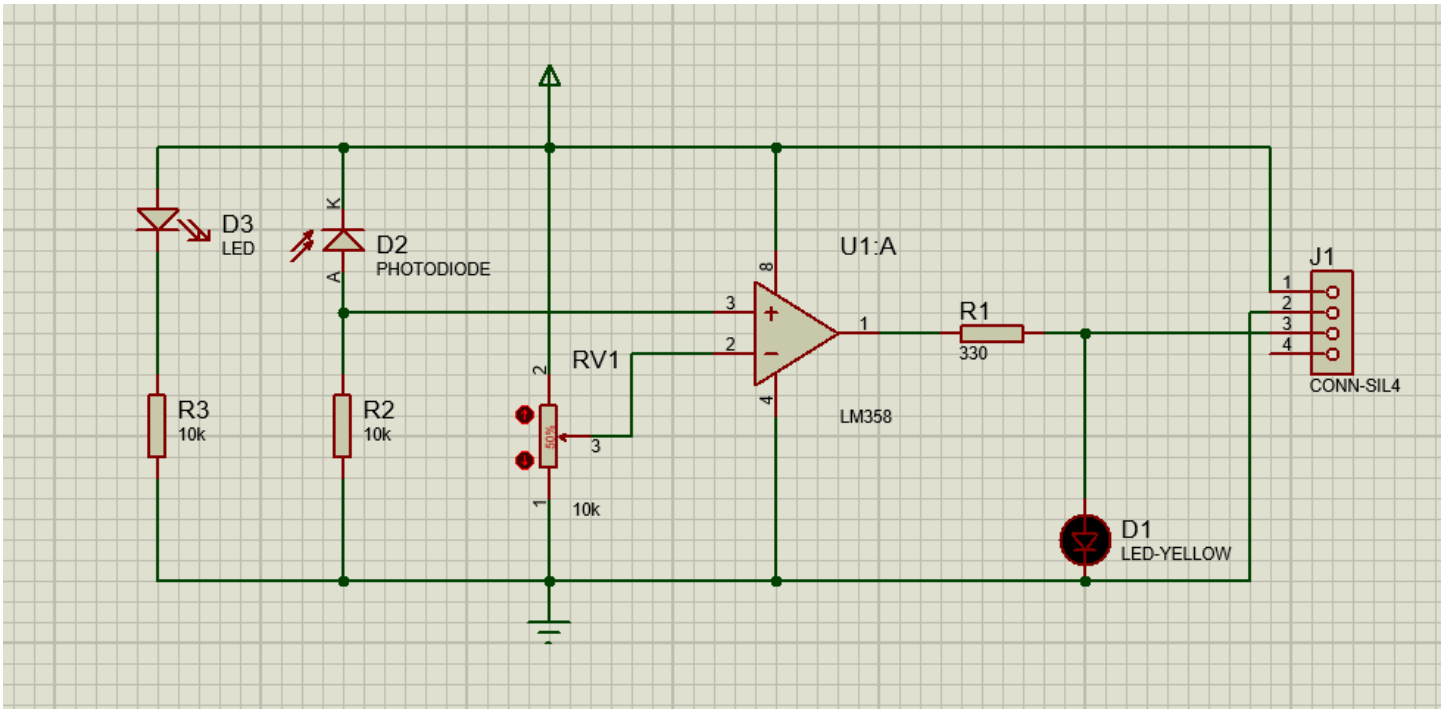
SIMPLE IR OBJECT DETECTOR PCB

Summary

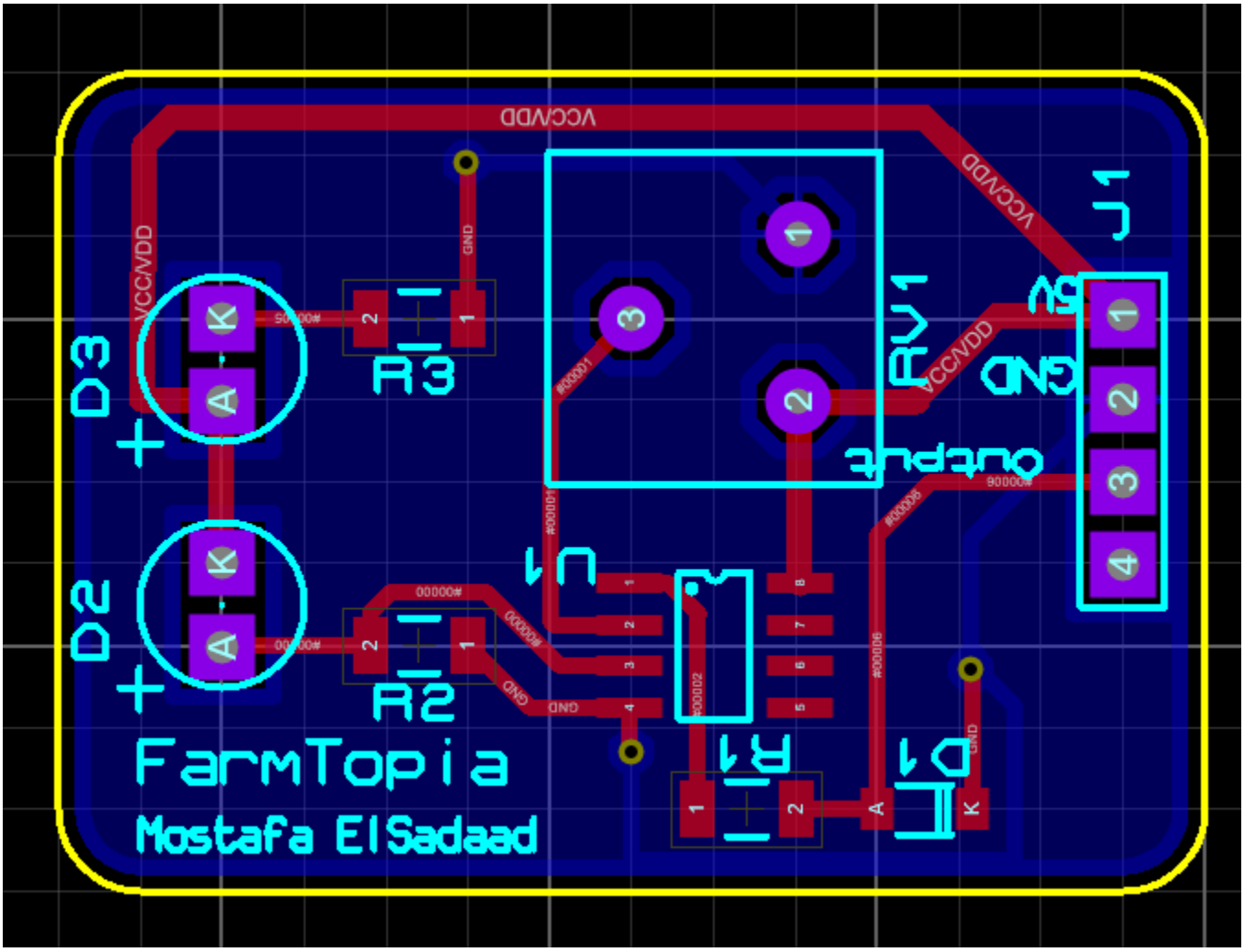
An infrared (IR) object detector sensor is an electronic device that detects if there is an object in front of it using IR LED and a photo diode. I designed and implemented that simple PCB from scratch. Only using proteus for schematics , simulation and PCB designing.

Schematics



Using LM358 as a comparator, IR LED and photodiode (as a voltage divider).When the photodiode receives a signal to the potential at the inverting input goes low. Thus the output of the comparator (LM358) goes high and the LED starts glowing. Resistor RV1 (preset=10k) is used to set the sensitivity of the circuit.

Layout



The layout is simple and I think it could be done in one layer and could be smaller if spent more time in it. I made sure that the minimum trace width is 0.3mm so it can supply a max of 1 Amps , but for that simple circuit it won't exceed that current, I also increased the width of the VCC track to make sure it won't heat up. Also , the components placement made it easy for debugging and soldering.

Bill of materials (BOM)

Item #	Qty	Mfg Part #	Description / Value	Package	Type
1	1	LM358	IC OPAMP DUAL	SOP8	SMD
2	4	Resistor	¼W Fixed Resistor	RESC3216X63	SMD
3	1	Potentiometer	10k ohm carbon potentiometer	PRE-SQ4	Thru-hole
4	1	LED	0.5W SMD LED	DMM	SMD
5	1	Infrared LED	IR LED Transmitter 940NM (3mm)	LED	Thru-hole
6	1	Photodiode	IR Receiver 2-PIN (IRR LED 5mm)	LED	Thru-hole

3D Visualization