PnPAssist

Project Charter

Problem to be solved

1- The purpose of this project is to minimize :

- the time spent on manual PnP process.
- the error for

  wrong component placement.
  placing the component in a wrong place
  wrong polarity placement

(computers don’t make mistakes, and humans often do.)

2- Ability to make a fast inspection under microscope after assembly of each part. It is difficult to center each part so that it can be examined under the microscope after assembly.

Project objective

- Reducing the time spent in the manual PnP process
- Reducing errors made in the manual PnP process
- Making the tedious manual pnp process more enjoyable

Project perimetre

Outlines and Limits of the project :

- The PCB size : This machine is not suitable for very big pcb boards.
- This machine is suitable for 1-20 piece PCBs production.

Project user

- Makers
- School’s Electronic Labs.
- R&D Companies.
- Before mass production it is common to assemble 1-5 boards manually. So every mass PCB production company can be a user.

Project budget

Mechanical Parts :	$40
PCB bare	$9
PCB BOM + assembly	$20
Custom CNC Part	$18
Kit packaging and other expenses	$10
TOTAL : $98 for one kit	

Project requirements

The machine must be precise enough to position small SMD components.

The machine must be desktop size, small footprint and easily movable.

The overall height of the machine must be short (max 70cm) in order to be used under microscope

The machine must work with 12V DC adapter

The machine must have a screen to display the component information

The machine must have a button to interact with the user to set the next smd component.

The machine must be silent and suitable for home and lab usage.

The machine must work with standard PNP files that have a standard file format.

The machine must be fast while positioning the smd components. Each movement must be shorter than 3 seconds.

The machine must be comfortable to use and ergonomic.