

Input image:



Detected Components:

**Analysis**

Detected Object Type: PCB

Detected Components

Components Detected: 221

[Component Data \(JSON\)](#)

Component data:

```
Components Detected: 221

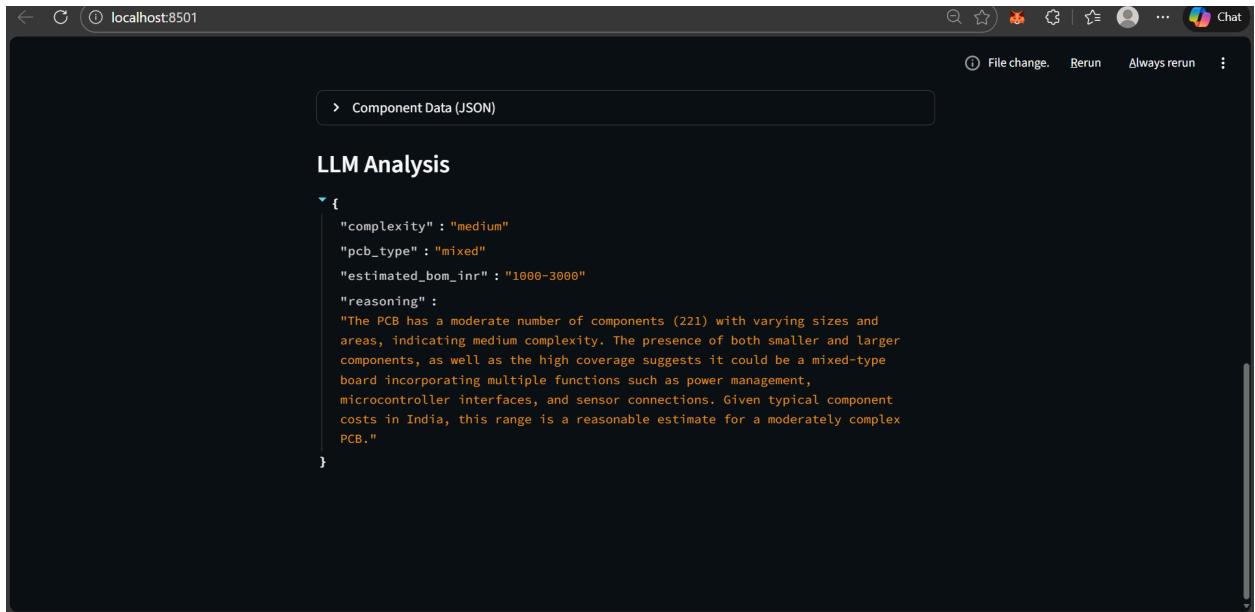
Component Data (JSON)

[[
  {
    "bbox": {
      "x": 168,
      "y": 377,
      "w": 27,
      "h": 22
    },
    "area": 594,
    "normalized_area": 0.001546875,
    "aspect_ratio": 1.2272727272727273,
    "centroid": {
      "x": 0.1890625,
      "y": 0.97
    },
    "mean_intensity": 114.41077441077441
  }
]]
```

Streamlit GUI:

The screenshot shows a Streamlit application interface. At the top, there's a header bar with a back arrow, a refresh button, a search icon, a star icon, a gear icon, a file icon, a download icon, a user icon, a three-dot menu, and a 'Chat' button. Below the header, the title 'PCB Inspection & BOM Estimation System' is displayed in large white font. Underneath the title, there's a sub-header 'Upload a PCB image for analysis'. A 'Choose an image' button is present, followed by a file upload area with a 'Drag and drop file here' placeholder and a 'Browse files' button. A note below specifies a limit of 200MB per file for JPEG, JPEG, PNG, BMP, and JFIF formats. A file named 'pcbimagetrial.jfif' is listed with a size of 115.3KB. Below this, the word 'Analysis' is centered in white. Under 'Analysis', it says 'Detected Object Type: PCB' and shows a photograph of a complex printed circuit board (PCB) with numerous green bounding boxes drawn around various components and areas of interest.

## LLM output:



A screenshot of a web browser window titled "Component Data (JSON)". The main content area displays the JSON output of an LLM analysis. The JSON object contains the following fields:

```
{  
  "complexity": "medium",  
  "pcb_type": "mixed",  
  "estimated_bom_inr": "1000-3000",  
  "reasoning":  
    "The PCB has a moderate number of components (221) with varying sizes and areas, indicating medium complexity. The presence of both smaller and larger components, as well as the high coverage suggests it could be a mixed-type board incorporating multiple functions such as power management, microcontroller interfaces, and sensor connections. Given typical component costs in India, this range is a reasonable estimate for a moderately complex PCB."  
}
```