

Abstract

Our lives are completely interwoven with electronic devices. Many areas focus on using and understanding them, such as electronics professionals, electrical engineers. The documentation of the device, which in many cases is difficult to access, contributes greatly to its understanding. In this printed circuit level schematics are meant by documentation.

For simpler circuits, it's sufficient to use only a single image, where the wires, through-holes or the surface mounted components can be easily observed to achieve proper analysis. These can be interpreted using different kind of image processing techniques. The dissertation guides the reader through the development of an application, which is able to detect wires, components and the connection between them in a semi-automatic way working together with the user. The process is called printed circuit board reverse engineering.

The dissertation touches the basic techniques of image processing, how image segmentation works within Selective Search, how it is possible to preprocess an image with filters such as Gaussian or Bilateral filters and how we can create a simple but clear user interface using Tkinter.