**CHAPTER 1**

**INTRODUCTION**

* 1. **Introduction:**

Bare PCB is a PCB without any placement of electronic components which is used along with other components to produce electronic goods. In order to reduce cost spending in manufacturing caused by the defected bare PCB, the bare PCB must be inspected. Moganti et al. (1996) proposed three categories of PCB inspection algorithms: Referential approaches, Non-Referential approaches and Hybrid approaches. Referential approaches consist of image comparison and model-based technique. Non-referential approaches or design-rule verification methods are based on the verification of the general design rules that is essentially the verification of the widths of conductors and insulators. Lastly, hybrid approaches involve a combination both of the referential and the non-referential approaches.

These PCB inspection approaches mainly concentrated on defect detection. However, defect detection did not provide satisfactory information for repairing and quality control work, since the type of detected defects cannot be clearly identified. Based on this incapability of defect detection, defect classification operation is needed in PCB inspection. Therefore, an accurate defect classification procedure is essential especially for an on-line inspection system during PCB production process.