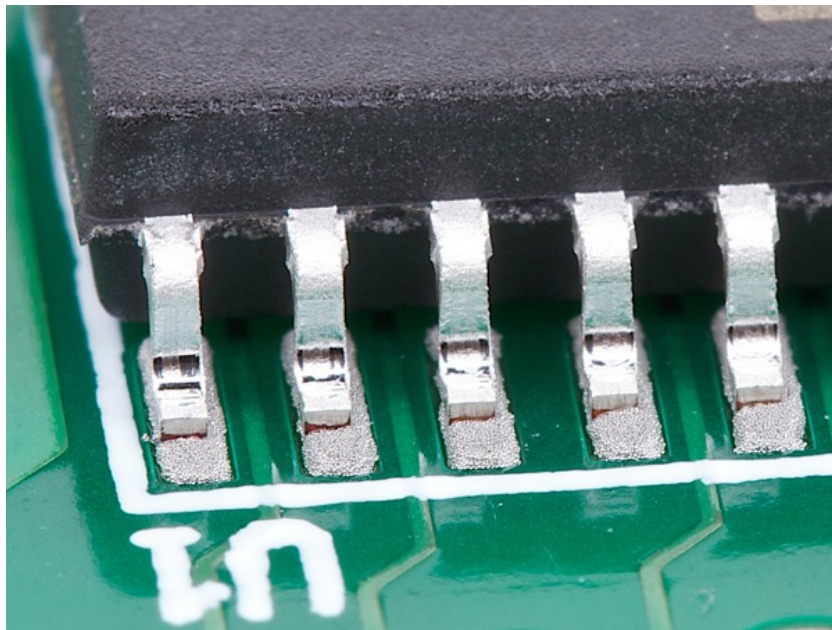


Assignment 4: Vision-based Automatic Systems

Industrial Systems Design and Integration 282 772

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Abstract

In this assessment, you are to design a system that can pick and place electronic Surface Mount Device (SMD) components onto a Printed Circuit Board (PCB) and validates their correct alignment using vision.

^{*}This work was not supported by any organization

[†]Faculty of Mechatronics Engineering, Massey University, Albany, Auckland, New Zealand Progress of project:
<https://github.com/alexlvla/Industrial-Systems-Design-and-Integration>

1. INTRODUCTION

In this assessment, you are to design a system that can pick and place electronic Surface Mount Device (SMD) components onto a Printed Circuit Board (PCB) and validates their correct alignment using vision.

1.1. Aim

Apply the principles and technologies in intelligent machine design and integration. Demonstrate familiarity with industrial vision systems and vision-based automatic systems.

```
'''Test program for TensorFlow'''

#pylint: disable=E0401
#pylint: disable=C0103

import tensorflow as tf

A = tf.placeholder(tf.float32, None, 'A')
B = tf.placeholder(tf.float32, None, 'B')

C = A + B

with tf.Session() as s:

    ans = s.run(C, {A: 2.5, B: 2.0})

    print(ans)
```

Figure 1: lalalala

2. Environment

2.1. Concepts

Several concepts are presented and evaluated using an appropriate quantitative assessment.

3. CONSTRAINTS

3.1. Developments

Several developments are presented and changes described and discussed, and evaluated using an appropriate quantitative assessment.

3.2. Evaluations

3.3. Final Design

A final design is presented and described and discussed in detail.

4. CRITIQUE

4.1. Machine-vision Algorithm

A machine vision algorithm is described and discussed in detail.

5. SOLUTIONS

short description of the machines operation.

critical reflection of your design process.

A detailed critical reflection of the employed design process is presented.

6. CONCLUSIONS

References

[1]