

Selective Disassembly of Electronic Components from WEEE using Artificial Intelligence

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Introduction

- The recycling of WEEE allows the recovery of many raw materials to be reused in new production processes
- In present, out of 50 different materials including plastics and rubbers present in WEEE only fifteen are recycled.
- Negative effects on humans and the environment.
- Reduce dependency for raw materials.

Main Objectives

- Development of a computer vision and deep learning based disassembly method for WEEE components.
- Extract the higher yielding materials from WEEE.
- Aim to mitigate supply risk by optimizing the recovery of critical raw materials from WEEE.

Critical Raw Materials (CRM)

A list of main critical raw material is given below:

- Antimony
- Phosphorus
- Gallium
- Beryllium
- Germanium
- Silicon

Work Plan

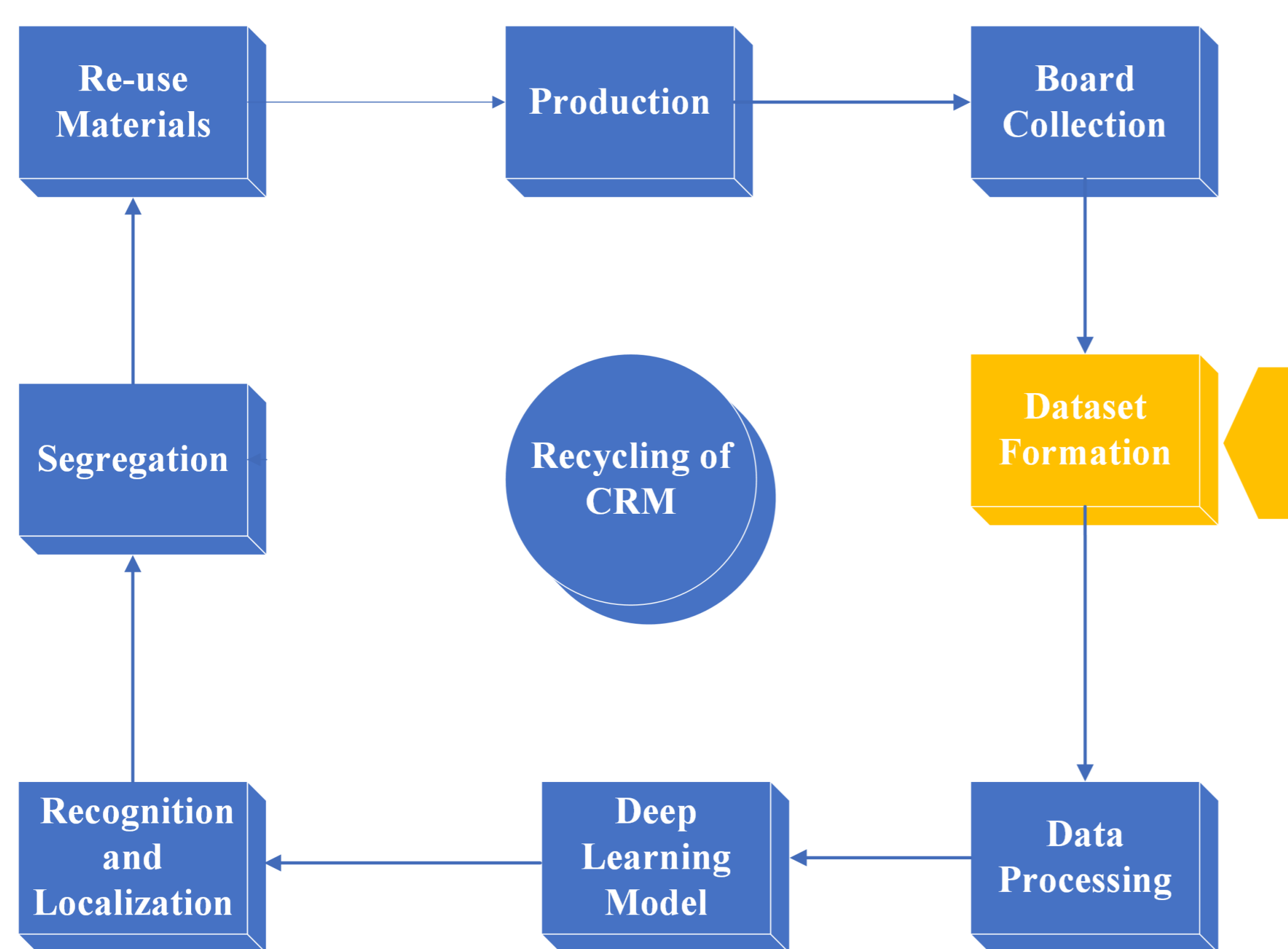


Figure 1: Proposed Work Plan

Examples of Electronic Boards (WEEE)

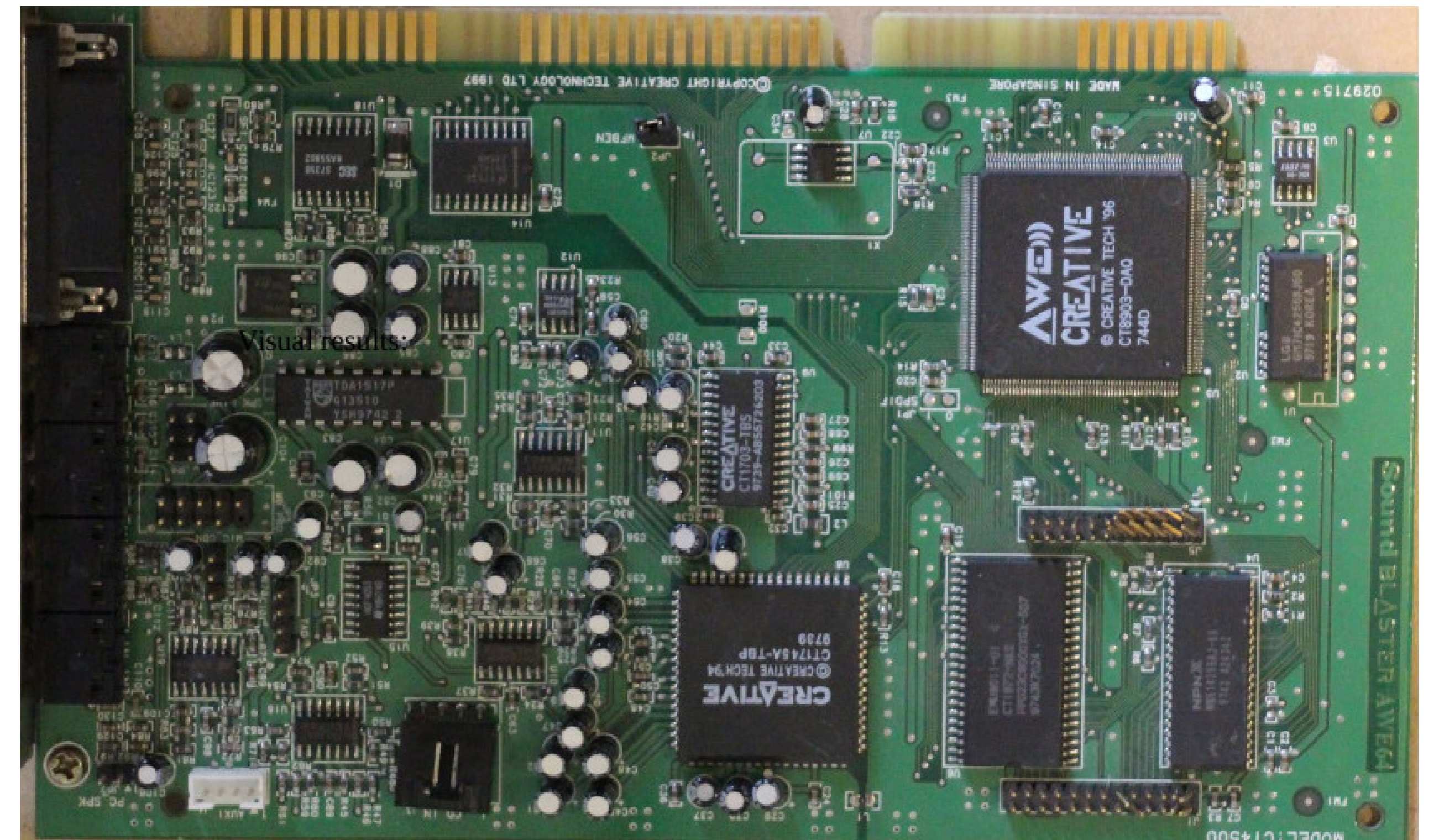


Figure 2: Electronic board before recognition

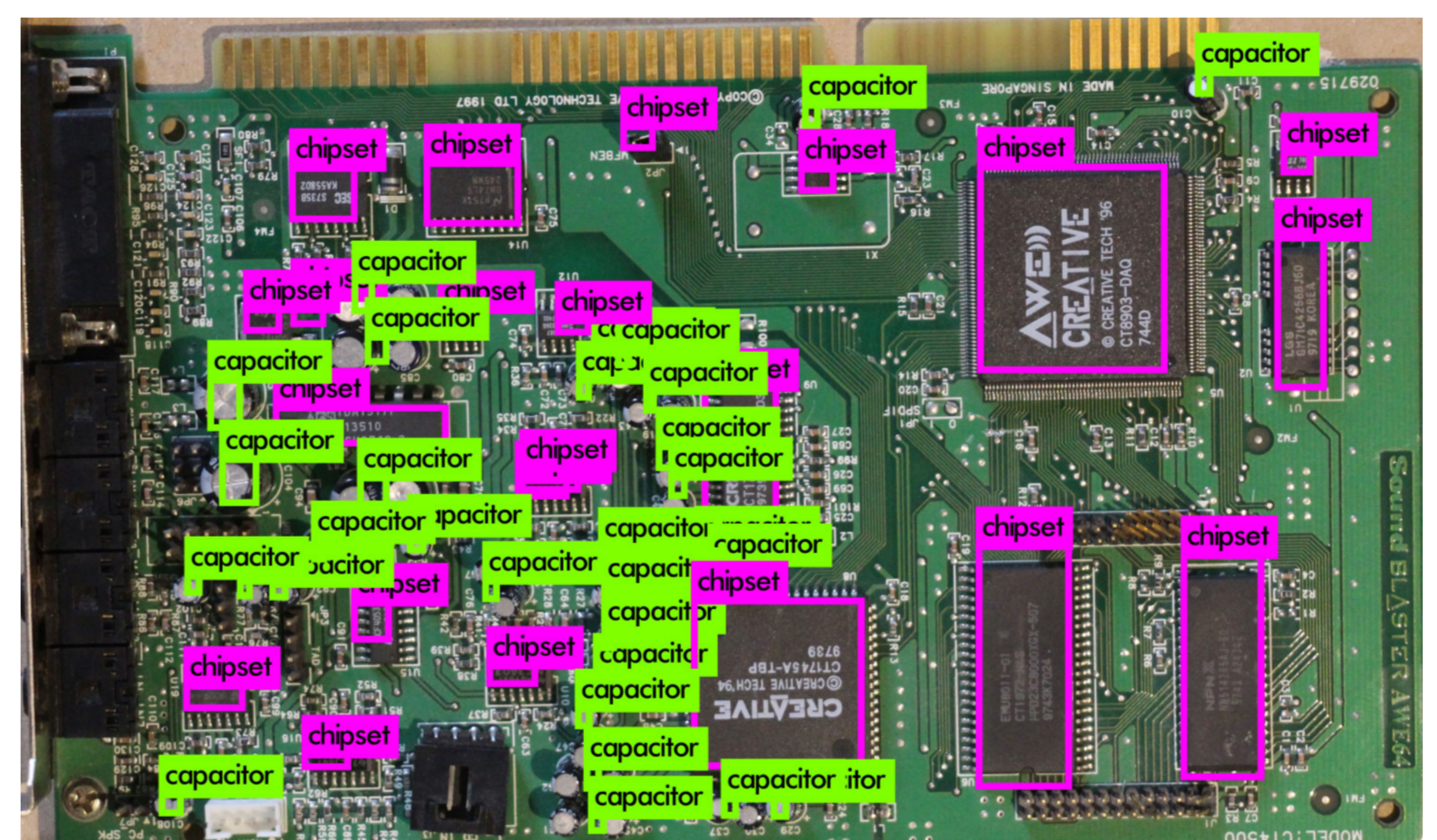


Figure 3: Electronic board after recognition

Conclusion

- Extract the materials contained therein with greater yield.
- Recycled materials reintroduce as raw materials in production cycle.
- It is used to build strategic reserves ('Urban Mines')
- Reduce the dependencies on countries outside EU.
- Increase circular production model in accordance with objective 12 of United Nations document "Sustainable Development Goals"



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