ICIEA24-000294
Plant Control for Fully Automated AI-Driven Product Type Recognition

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The development and implementation of an AI-driven control system into an automated process is described. Special emphasis is placed on optimizing raw material recovery by classifying recyclable devices. The developed system is an example of the interlocking of mechanics, electronics and AI in recycling technology.

In the recycling sector, the automatic recognition and classification of products using artificial intelligence (AI) is becoming important:

- Neural Network based Classification,
- Transfer Learning Concept,
- multiple Sensors to detect Components,
- Net Crawler Technology for the Training Data Acquisition,
- Communication with robotics.
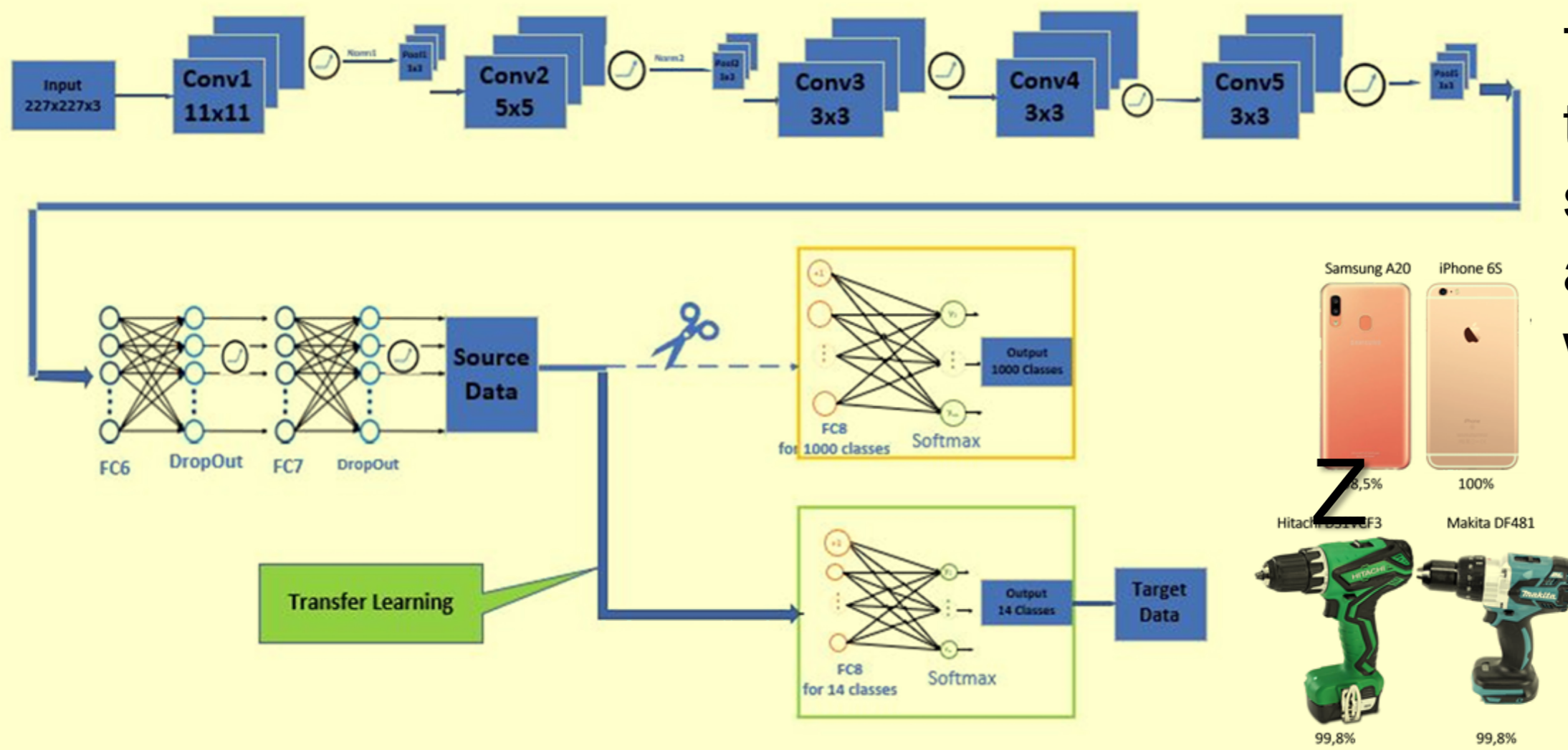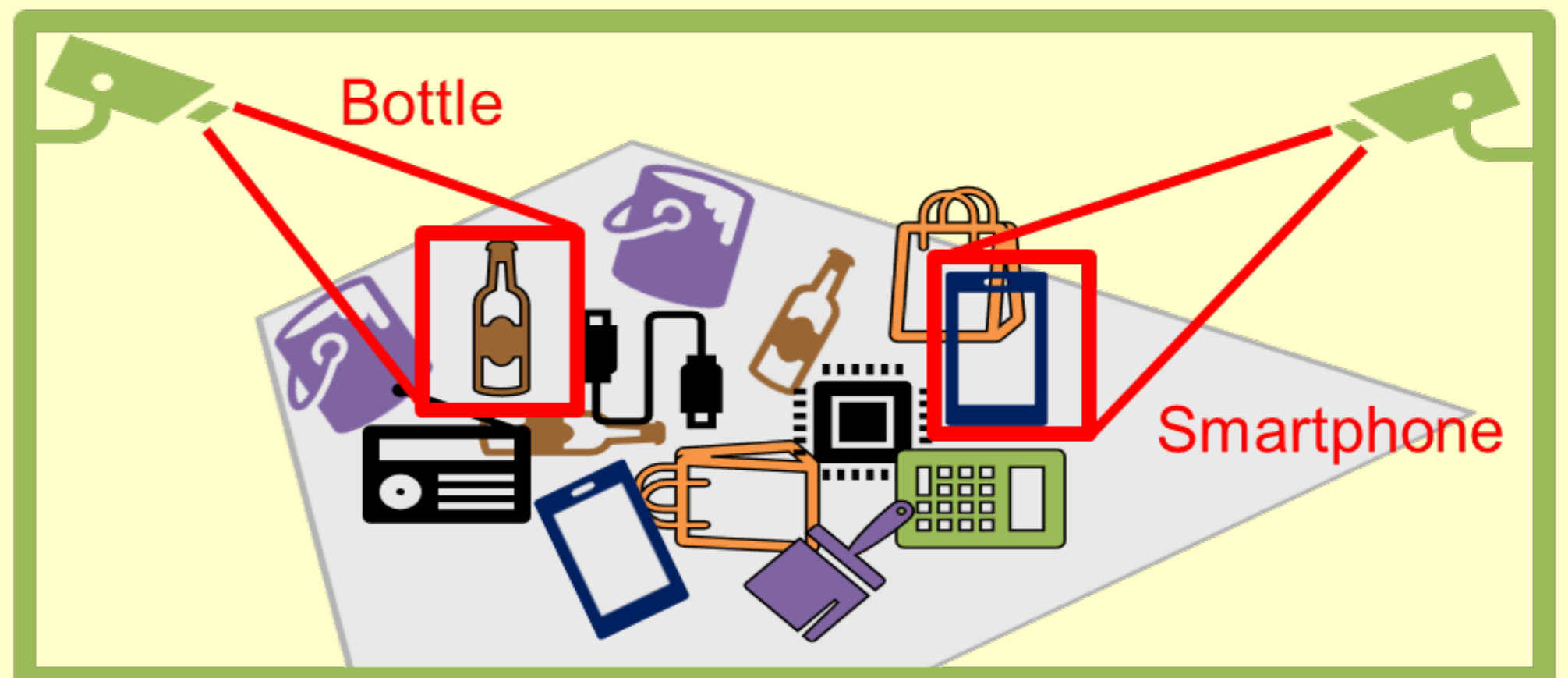
Transfer learning is a machine learning technique that uses knowledge from a source domain to enhance learning in a target domain by reusing learned weights:
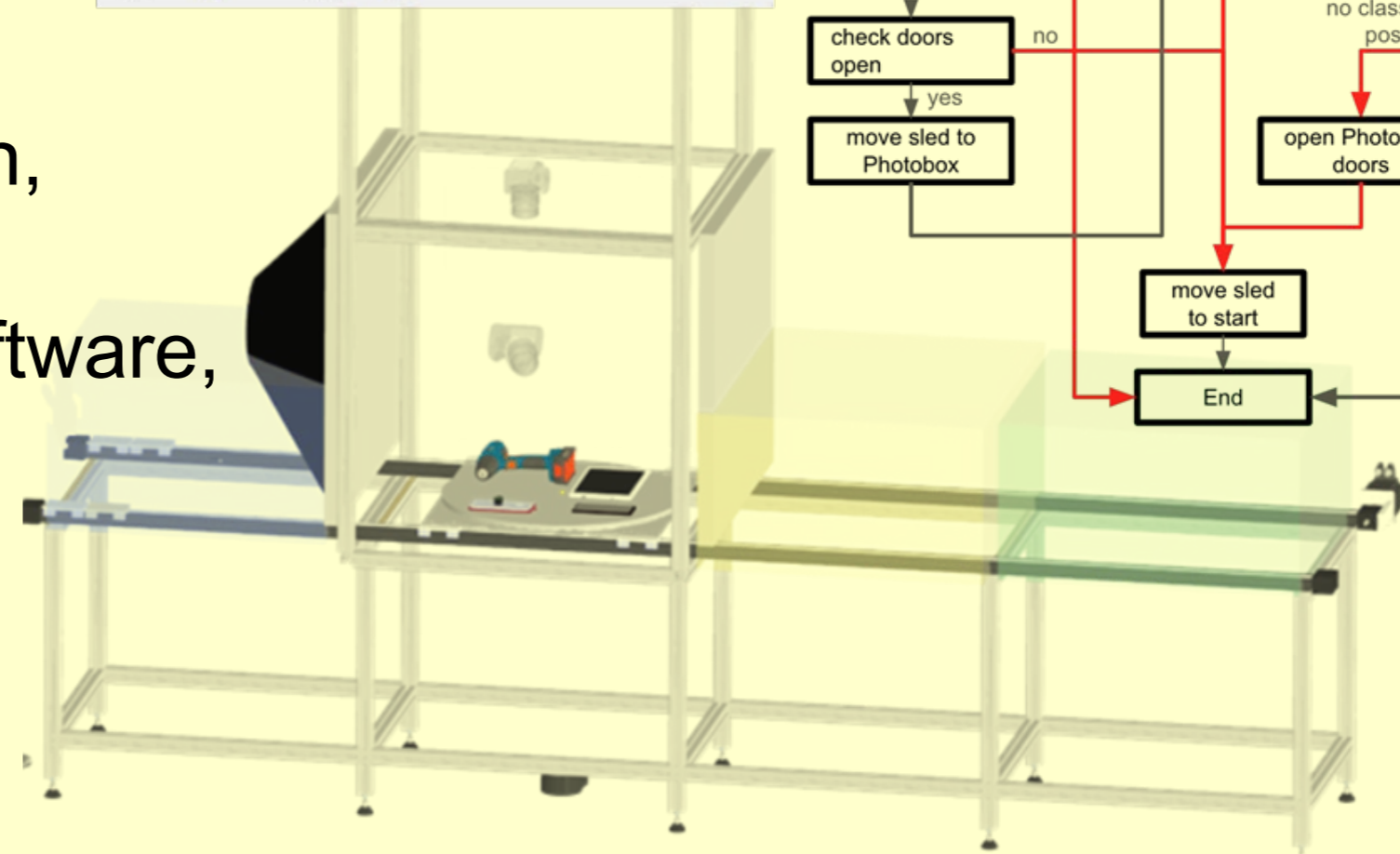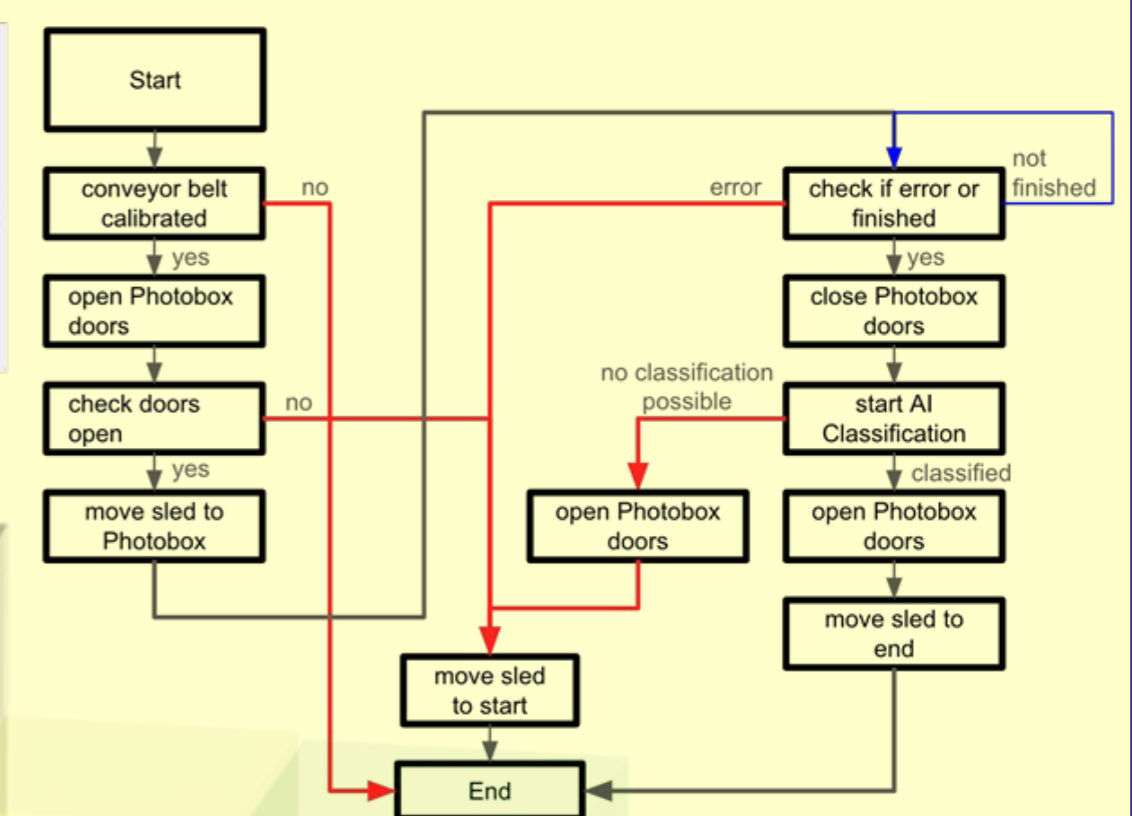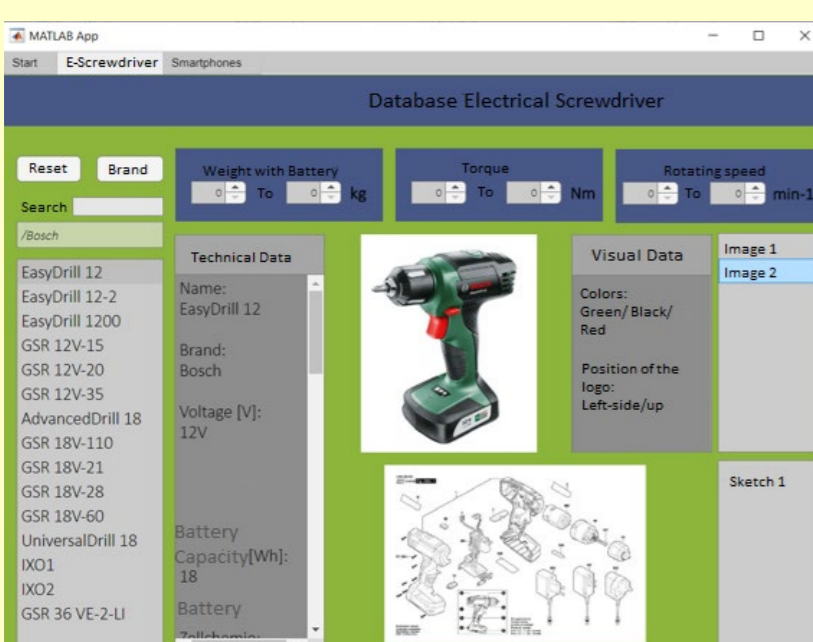
- great advantages in achieving high performance
- saving training time, memory, and effort in network design.

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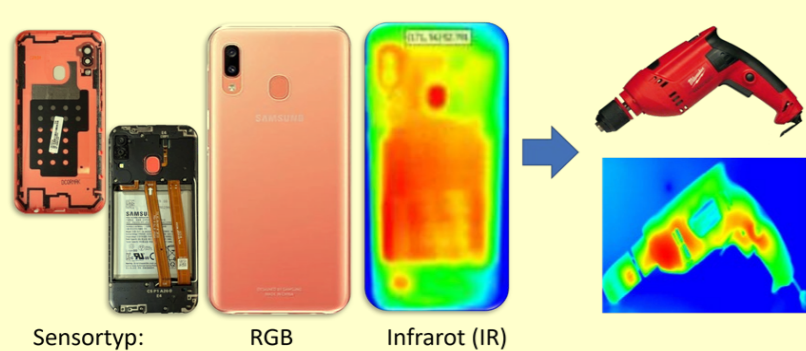
Implementation of the Prototype:
- Integration of the trained Neural Network,
- Hardware Configuration,
- Development of the Automation Control Software,
- System Setup,
- Evaluation.

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