

ABSTRACT

*Visually impaired individuals face difficulties in identifying banknote denominations during financial transactions, which can increase the risk of errors or fraud. Therefore, an assistive system capable of automatically detecting currency denominations and providing voice feedback is essential. This research develops a portable Indonesian Rupiah **currency detection system** based on Computer Vision and Text-to-Speech (TTS) to support the independence of visually impaired users. The system uses a **Raspberry Pi Zero** as the main processing unit, receiving image input from a Raspberry Pi camera. The banknote image undergoes a preprocessing stage and is then processed using a template matching method to recognize the denomination. The detection result is converted into voice output via TTS and played through a speaker as user feedback. The system is portable, powered by a Li-Ion 16340 battery, and is developed using Python, OpenCV, and TensorFlow to support real-time processing. Experimental results show that the system can accurately recognize banknote denominations, offering a practical, efficient, and user-friendly solution for visually impaired individuals in daily transactions.*

Keywords: *Visually Impaired, Computer Vision, Text-to-Speech, Raspberry Pi, Currency Detection.*