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Electricity Meter Reading Based on Image Processing

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ABSTRACT

Electricity plays a major role in our daily lives. Power consumption is increasing day by day. According to a report from the CEB (Ceylon Electricity Board) 161,150 new power connections were provided in 2018. The device for measuring power consumption is a watt-hour meter. Smart meters are not widely used in developing countries due to the cost of infrastructure, it takes more time and effort to replace analog meters with smart meters, even in developed countries like the United States there are more than 24 million non-automatic meters still in operation. Therefore, the meter reading process is done manually by a meter reader who visits the customer's premises once a month to perform the meter reading. This manual onsite meter reading process is very expensive in terms of time and manpower. The existing meter reading process has numerous drawbacks. Even pandemics such as covid-19 made so many difficulties to this manual meter reading process and it is a threat to society. This dissertation proposes a system that automates this manual meter reading process using the knowledge of computer science to provide effective service and reduce the operation cost which will ultimately benefit utility service providers as well as consumers.

Keywords: Electricity Meters, Automatic Meter Reading, Computer Vision, Image Processing, Deep Learning, Region Of Interest, UNET, Easy OCR