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Title: 3D Image Reconstruction of Rising Air Bubbles Using Optical Tomography System

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This research presents an application of Charge-Coupled Device (CCD) linear sensor and laser diode in an optical tomography system. Optical tomography is a non-invasive and non-intrusive method of capturing a cross-sectional image of multiphase flow. The measurements are based on the final light intensity received by the sensor and this approach is limited to detect solid objects only. The aim of this research is to analyse and demonstrate the capability of laser with a CCD in an optical tomography system for detecting transparent object exist in crystal clear water. The image reconstruction algorthim used in this research is filtered images of Linear Back Projection algorthim. These algorithms were programmed using LabVIEW programming software. Experiments for detecting rising air bubbles were conducted. A moving object's characteristic such as diameter, path and velocity can also be observed. As a conclusion, this research has successfully developed a non-intrusive and non-invasive optical tomography system that can detect and capture the image of three-dimensional objects in crystal clear water.

Biography

Juliza Jamaludin received her B.Eng. degree with Honours in Electrical-Instrumentation and Control in 2008 at Universiti Teknologi Malaysia (UTM). She working as an Electrical Engineer at Malaysian Public Work Department from 2009 to 2011. She further her study for M. Eng. degree (Electrical-Mechatronics and Automatic Control) at UTM and graduated in 2012. She received her PhD degree from UTM in 2016. Currently she is a senior lecturer at Faculty of Engineering and Built Environment, Universiti Sains Islam Malaysia. She has published more than 20 papers and her research interest includes process tomography, Charge-Coupled Device and sensor technology.

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