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Judul Jurnal Ilmiah (Artikel) : Optimization of Computational Resources for Real-Time Product Quality Assessment Using Deep Learning and Multiple High Frame Rate Camera Sensors

Jumlah Penulis : Sebelas (Adi Wibowo, Joga Dharma Setiawan, Hadha Afrisal, Anak Agung Sagung Manik Mahachandra Jayanti Mertha, Sigit Puji Santosa, Kuncoro Budhi Wisnu, Ambar Mardiyoto, Henri Nurrahkman, Boyi Kartiwa and Wahyu Caesarendra)

Status Pengusul : penulis ke 1(satu)

Identitas Jurnal Ilmiah : a. Nama Jurnal : Applied System Innovation
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2. **Ruang lingkup dan kedalaman pembahasan:**
Ruang lingkup paper ini juga membahas penggunaan beberapa kerangka aplikasi deep learning untuk menghasilkan aplikasi yang dapat diandalkan dalam menilai kualitas produk. Pembahasan mendalam terkait hasil percobaan menunjukkan bahwa aplikasi berbasis web dengan kerangka tensorflow.js dan MobileNet v1 memberikan kinerja yang lebih baik dibandingkan dengan aplikasi desktop.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
Data-data hasil yang diperoleh dalam penelitian baik dengan didukung metodologi yang tepat dengan jumlah referensi kurang dari 5 tahun sejumlah 22.

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Semarang, 2 April 2023
Reviewer 1



Prof. Dr. Kusworo Adi, S.Si., M.T..
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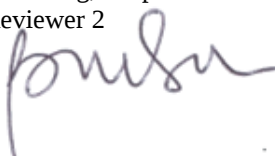
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2. **Ruang lingkup dan kedalaman pembahasan:**
Ruang lingkup paper ini membahas tentang pengembangan sistem inspeksi kualitas produk otomatis menggunakan deep learning pada beberapa High Frame Rate Camera (HFRC) untuk mendeteksi cacat pada benda berbentuk silinder yang bergerak secara real-time. Kedalaman pembahasan sangat baik dengan beberapa hasil experiment dan perbandingan dengan metode lain.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
Data mutakhir dari PT Pindad, dan, telah diperoleh sekumpulan informasi yang didukung oleh metodologi yang tepat dan didukung oleh referensi yang terbaru, yaitu kurang dari 5 tahun yang lalu, dengan total sebanyak 22.

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Human eyes generally perform product defect inspection in Indonesian industrial production lines; resulting in low efficiency and a high margin of error due to eye tiredness. Automated quality assessment systems for mass production can utilize deep learning connected to cameras for more efficient defect detection. However, employing deep learning on multiple high frame rate cameras (HFRC) causes the need for much computation and decreases deep learning performance, especially in the real-time inspection of moving objects. This paper proposes optimizing

computational resources for real-time product quality assessment on moving cylindrical shell objects using deep learning with multiple HFRC Sensors . Two application frameworks embedded with several deep learning models were compared and tested to produce robust and powerful applications to assess the quality of production results on rotating objects. Based on the experiment results using three HFRC Sensors , a web-based application with tensorflow.js framework outperformed desktop applications in computation. Moreover, MobileNet v1 delivers the highest performance compared to other models. This result reveals an opportunity for a web-based application as a lightweight framework for quality assessment using multiple HFRC and deep learning . © 2023 by the authors.

Author keywords

deep learning ; deep learning for industry; image classification; image sensor processing; real-time assessment

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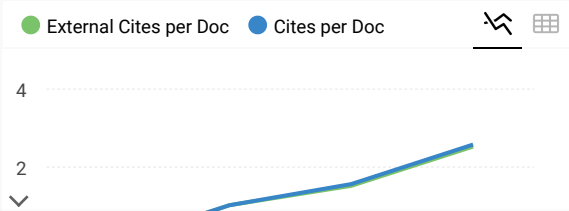
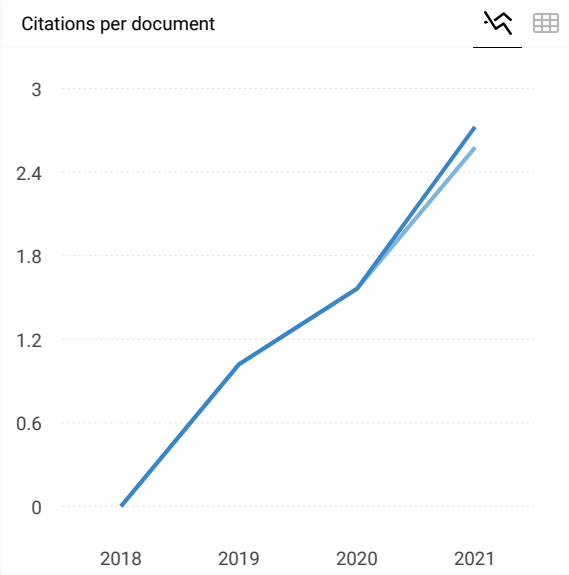
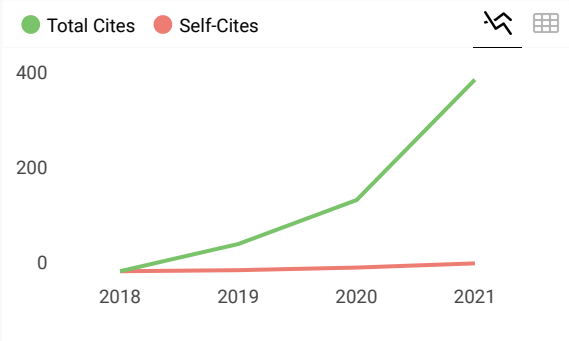
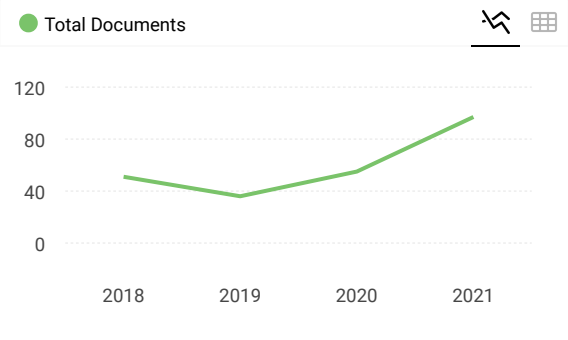
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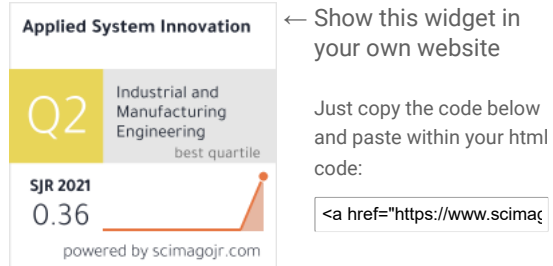
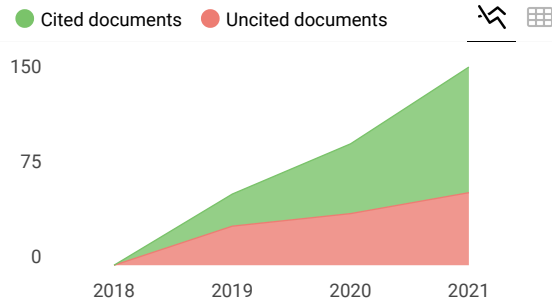
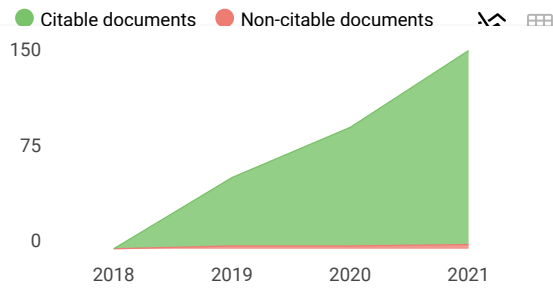
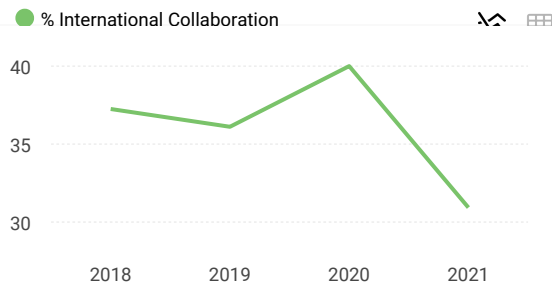


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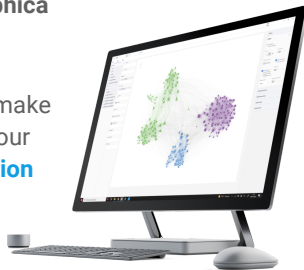
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Abstract Bluetooth Low Energy (BLE) is a wireless technology for low-power, low-cost and low-complexity short-range communications. On top of the BLE stack, the Bluetooth Mesh profile can be adopted to handle large networks with mesh topologies. BLE is a promising candidate for the implementation [...] Read more.

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Abstract In recent years, the Smart Grid (SG) has been conceptualized as a burgeoning technology for improving power systems. The core of the communication infrastructure in SGs is the Synchronophasor Communication Network (SCN). Using the SCN, synchronophasor data communication is facilitated between the Phasor [...] Read more.

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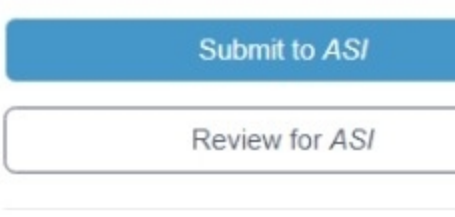
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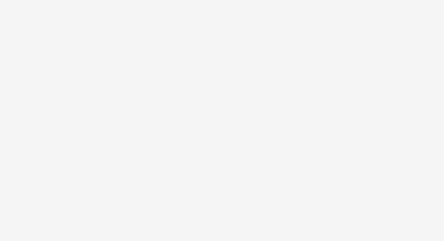
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