PREGNANCY CLASSIFICATION IN SHEEP FROM ULTRASONOGRAPHY (USG) IMAGES USING CONVOLUTIONAL NEURAL NETWORK BASED ON EFFICIENTNET

Septiananda Rifqi Nurhidayat
Study Program of Informatics Engineering
Majoring in Information Technology

ABSTRACT

Pregnancy detection in sheep is a crucial aspect of reproductive management in livestock. Ultrasonography (USG) has long been used to visually identify pregnancy; however, interpreting USG images requires specialized expertise. This study aims to develop an automated classification system for sheep pregnancy based on USG images using deep learning with the EfficientNet-B1 architecture. Image data were collected from partner farms and processed through augmentation and labeling stages. The model was trained and evaluated using accuracy, precision, recall, and F1-score metrics. The results show that EfficientNet-B1 can classify images with high accuracy, indicating that the developed system has the potential to be used in practical livestock settings as a non-invasive diagnostic tool. These findings suggest that deep learning technology can play a significant role in supporting the digital transformation of the livestock sector.

Keywords: *Sheep Pregnancy, Sheep, Ultrasonografi (USG), Deep Learning, Convolutional Neural Network (CNN)*