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Activity Prediction in Tri Pramana Learning Concept in ResNet-based Virtual Reality Environment

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1

Cites in
Paper

21

Full
Text Views

Abstract

Document Sections

- I. Introduction
- II. Related Works
- III. Methods
- IV. Result and Discussion
- V. Conclusion

Authors

Figures

References

Abstract:

This research aims to visually predict activities in the Tri Pramana Learning Concept in a virtual reality (VR) environment using the ResNet-50 deep learning architecture. The method in this research consists of dataset preparation (data acquisition, frame extraction, data cleaning, image resizing, data subsetting), ResNet-50 model building, and evaluation. The data used in this study comes from learning recordings in a virtual classroom environment of fiber optic splicing practicum. The total number of images in this dataset is 2,163 which is divided into training subset (70%), validation subset (20%), and testing subset (10%). This research focuses on experimenting with epoch variations of 100, 200, 300, and 400 to produce the best model. Through the investigation, it was found that the model with epoch 400 was able to provide the best performance with Accuracy 97.72%, Precision 97.81%, Recall 97.77%, dan F1- Score 97.79%. Future experiments will focus on the variation of learning rate and batch hyperparameters as well as comparisons with other deep learning architectures to predict activities in the Tri Pramana Learning Concept in virtual environments.

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