



Abstract

This study explores the usage and effectiveness of Test Time Adaptation (TTA) methods for improving handwritten digit recognition in the context of 2024 Indonesian Presidential Election. The study utilizes two approaches: (1) Test Time Adaptation by Entropy Minimization (TENT) and Source Hypothesis Transfer (SHOT) in adapting pre-trained MNIST LeNet models to real world election tally form under condition of an imbalanced dataset with significant distribution shifts. The study uses a reverse engineering approach on the government's SIREKAP android application to evaluate pre-processing, post-processing, and model inference methodologies. Experiments with various Batch Normalization Layers placement on LeNet-5 models revealed that such placement plays a huge role into TENT's adaptation performance, with our best configuration achieving 74% accuracy. SHOT showed higher potential with accuracy up to 79%. However, it exhibited instability with fluctuating performance across different source domain adaptation dataset sizes. Our findings found that both method is able the government model found in SIREKAP application exhibiting performance that achieved 18% accuracy during evaluation on our election dataset. However, both performances are highly influenced by hyperparameter sensitivity. This study provides comprehensive insights for improving OCR models deployed in critical civic applications and highlights the challenges of implementing test-time adaptation in real-world scenarios.



UNIVERSITAS
GADJAH MADA

Exploring Test Time Adaptation On The Indonesian Presidential 2024 Election Dataset
Dwikavindra Haryo Radithya, Drs. Medi, M.Kom.

Universitas Gadjah Mada, 2025 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Acknowledgements

I would like to express my sincere gratitude to my supervisor Drs. Medi, M.Kom for his unwavering support during the process of this study. His guidance and kindness have helped me overcome the obstacles during all the processes of this study. I would also like to thank my family: Ir. Pramasaleh Haryo Utomo, MT. and Neni Widaningrum for the unconditional love and support throughout the process of this study. Additionally, I thanked my friends for the constant reminders and support to give the best of efforts for this study.