# ABSTRACT

I Putu Cahya Adi Ganesha.52419866

**IMPLEMENTASI MODEL *ENSEMBLE* CNN+BiLSTM DENGAN MEKA-
NISME *ATTENTION* UNTUK DETEKSI DOMAIN DGA PADA PI-HOLE**
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**Keywords:** Blocklist, CNN+BiLSTM, *Deep learning*, Deep learning-based DGA
domain detection, *Domain Generation Algorithms* (DGA), Internet security, Pi-hole.
(xii + 116 + attachments)

This thesis proposes a new approach to improve the functionality of Pi-hole, a
network-level ad and tracker blocking application, by integrating a *deep learning*
model. The aim of this research is to overcome the limitations of Pi-hole that
only relies on static *blocklist* data and does not provide protection from domains
generated by *Domain Generation Algorithms* (DGA). The *deep learning* model used
is a convolutional neural network and a bidirectional recurrent layer with an *attention*
mechanism (CNN+BiLSTM *ensemble* with *attention* mechanism), adapted from the
formulation of Namgung dkk. (2021). This model can detect *Domain Generation
Algorithm* (DGA) domains and enrich the Pi-hole *blocklist*. The replication of the
model formulation of Namgung dkk. (2021) is made in the form of *pseudocode* to
facilitate replication, as well as providing a *low-level* description that has not existed
before from the model formulation of Namgung dkk. (2021) before implementing it
on Pi-hole. This research also designs an evaluation method to test the functionality
and effectiveness of the model. This research shows that the integration of DGA
domain detection based on *deep learning* on Pi-hole can increase user protection
from harmful internet content. This research also provides suggestions for further
development by referring to similar applications.

Bibliography (2016-2023)