

DAFTAR ISI

| | |
|--|--------------|
| HALAMAN JUDUL | i |
| LEMBAR PENGESAHAN | ii |
| PERNYATAAN KEASLIAN PROYEK AKHIR | iii |
| KATA PENGANTAR..... | iv |
| DAFTAR ISI..... | vi |
| DAFTAR GAMBAR..... | x |
| DAFTAR TABEL | xv |
| DAFTAR LAMPIRAN | xvii |
| INTISARI | xviii |
| ABSTRACT | xix |
| BAB I PENDAHULUAN..... | 1 |
| 1.1. Latar belakang | 1 |
| 1.2. Rumusan masalah..... | 2 |
| 1.3. Tujuan dan manfaat Proyek Akhir | 2 |
| 1.4. Batasan penelitian..... | 3 |
| 1.5. Sistematika penulisan | 5 |
| BAB II KAJIAN PUSTAKA | 7 |
| 2.1. Tinjauan Pustaka | 7 |
| 2.2. Dasar teori | 15 |
| 2.2.1. Tanaman Kacang Tanah..... | 15 |
| 2.2.2. <i>Artificial Intelligence, Machine Learning, dan Deep Learning</i> 15 | |
| 2.2.3. Klasifikasi Gambar (<i>Image Classification</i>)..... | 16 |

| | |
|--|----|
| 2.2.4. Convolutional Neural Network (CNN)..... | 16 |
| 2.2.5. Convolutional Layer | 17 |
| 2.2.6. Pooling Layer | 18 |
| 2.2.6. <i>Fully Connected Layer</i> | 20 |
| 2.2.7. <i>ReLU</i> | 20 |
| 2.2.8. <i>SoftMax</i> | 21 |
| 2.2.9. <i>Categorical Crossentropy Loss</i> | 21 |
| 2.2.10. <i>Transfer Learning dan Pretraining dan Fine Tuning</i> | 22 |
| 2.2.11. InceptionV3..... | 23 |
| 2.2.12. ResNet50V2 | 24 |
| 2.2.13. VGG19 | 25 |
| 2.2.14. <i>Learning Rate</i> | 28 |
| 2.2.15. Augmentasi Data..... | 28 |
| 2.2.16. Metrik Evaluasi (<i>Evaluation Metrics</i>) | 28 |
| 2.2.17. <i>Python</i> | 32 |
| 2.2.18. PIP (<i>Python Package Installer</i>) | 32 |
| 2.2.19. <i>TensorFlow</i> | 33 |
| 2.2.20. Keras | 33 |
| 2.2.21. NumPy | 33 |
| 2.2.22. Scikit Learn | 34 |
| 2.2.23. Seaborn dan Matplotlib..... | 34 |
| 2.2.24. Pandas | 34 |
| 2.2.25. SQLite | 35 |
| 2.2.26. Streamlit..... | 35 |
| 2.2.27. Unified Modeling Language | 36 |

| | |
|--|-----------|
| 2.2.28. <i>Load Testing</i> | 40 |
| 2.2.29. <i>Black Box Testing</i> | 40 |
| 2.2.30. <i>User Acceptance Testing (UAT)</i> | 40 |
| BAB III METODE PENELITIAN | 43 |
| 3.1. Alat dan bahan | 43 |
| 3.1.1. Dataset..... | 43 |
| 3.1.2. Perangkat..... | 44 |
| 3.2. Tahapan proyek akhir | 45 |
| 3.2.1. <i>Data Collection</i> (Pengumpulan Data)..... | 46 |
| 3.2.2. <i>Data Splitting</i> (Pembagian Data) | 47 |
| 3.2.3. Implementasi Model <i>Pretrained</i> | 48 |
| 3.2.4. Evaluasi Final Model | 50 |
| 3.2.5. Integrasi Model ke <i>Streamlit</i> | 50 |
| 3.2.6. Pengujian Aplikasi | 51 |
| 3.3. Perancangan alat/purwapura..... | 52 |
| 3.3.1. Persiapan Platform Analisis | 52 |
| 3.3.2. Perancangan Aplikasi Pengidentifikasi Penyakit..... | 53 |
| 3.3.3. Pengembangan Aplikasi..... | 66 |
| 3.4. Analisis Data | 66 |
| 3.4.1. Analisis ResNet50V2..... | 66 |
| 3.4.2. Desain Eksperimen | 85 |
| 3.4.3. <i>Evaluation Metrics</i> | 87 |
| 3.4.4. Pengujian | 92 |
| 3.4.4.1. Rancangan <i>Load Testing</i> | 92 |
| 3.4.4.2. Rancangan <i>Black Box Testing</i> | 92 |

| | |
|--|------------|
| 3.4.4.3. Rancangan User Acceptance Testing..... | 96 |
| BAB IV HASIL DAN PEMBAHASAN | 97 |
| 4.1. <i>Data Collection</i> (Pengumpulan Data) | 97 |
| 4.2. <i>Data Splitting</i> | 99 |
| 4.3. Implementasi Model <i>Pretrained</i> | 103 |
| 4.4. Evaluasi Final Model..... | 111 |
| 4.4.1. Evaluasi..... | 111 |
| 4.4.2. Hasil Eksperimen | 115 |
| 4.4.3. Pengujian Model Menggunakan Dataset Eksternal | 133 |
| 4.5. Integrasi Model dengan Aplikasi <i>Web</i> | 136 |
| 4.5.1. Inisiasi | 136 |
| 4.5.2. Pembangunan Sistem Aplikasi | 139 |
| 4.5.3. Hasil Aplikasi..... | 149 |
| 4.6. Pengujian Aplikasi | 152 |
| 4.6.1. <i>Load Testing</i> | 152 |
| 4.6.2. <i>Black Box Testing</i> | 154 |
| 4.6.3. <i>User Acceptance Testing</i> | 173 |
| BAB IV PENUTUP | 177 |
| 5.1 Kesimpulan..... | 177 |
| 5.2 Saran | 177 |
| DAFTAR PUSTAKA | 179 |
| LAMPIRAN..... | 188 |