



DAFTAR ISI

| | |
|--|------|
| HALAMAN JUDUL | i |
| HALAMAN PENGESAHAN | ii |
| PERNYATAAN | iii |
| MOTTO | iv |
| PRAKATA | v |
| DAFTAR ISI | vii |
| DAFTAR GAMBAR | x |
| DAFTAR TABEL | xi |
| DAFTAR LAMPIRAN | xii |
| INTISARI | xiii |
| ABSTRACT | xiv |
| | |
| BAB I PENDAHULUAN | |
| 1.1 Latar Belakang | 1 |
| 1.2 Perumusan Masalah..... | 4 |
| 1.3 Tujuan Penelitian..... | 4 |
| 1.4 Manfaat Penelitian..... | 5 |
| 1.5 Tinjauan Pustaka | 5 |
| 1.6 Batasan Masalah..... | 7 |
| 1.7 Metode Penelitian..... | 7 |
| 1.8 Sistematika Penulisan..... | 7 |
| | |
| BAB II LANDASAN TEORI | |
| 2.1 KONSEP DASAR <i>TIME SERIES</i> | 9 |
| 2.1.1 Data <i>time series</i> | 9 |
| 2.1.2 Stasioneritas | 12 |
| 2.1.3 Fungsi autokorelasi dan autokorelasi parsial | 13 |
| 2.1.4 Proses <i>White Noise</i> | 17 |
| 2.1.5 <i>Ordinary Least Square Estimator</i> | 18 |



| | |
|---|----|
| 2.1.6 Uji nonlinearitas | 19 |
| 2.1.7 Kriteria kebaikan model | 21 |
| 2.1.8 Model <i>Self Exciting Threshold Autoregressive</i> ... | 23 |
| 2.2 KONSEP DASAR WAVELET..... | 23 |
| 2.2.1 Analisis multiresolusi..... | 26 |
| 2.2.2 Wavelet Haar..... | 27 |
| 2.3 KONSEP DASAR <i>NEURAL NETWORK</i> | 29 |
| 2.3.1 <i>Feedforward neural network</i> | 36 |
| 2.3.2 Algoritma pembelajaran <i>backpropogation</i> | 36 |
| 2.4 KONSEP DASAR HIMPUNAN FUZZY | 37 |
| 2.4.1 Fuzzy <i>clustering</i> | 41 |
| 2.4.2 Sistem inferensi fuzzy | 42 |
| 2.4.2 Sistem neuro-fuzzy..... | 53 |
| BAB III PEMBAHASAN | |
| 3.1. Model <i>Wavelet Recurrent Neuro Fuzzy</i> (WRNF) | 55 |
| 3.1.1 Transformasi wavelet diskret..... | 55 |
| 3.1.2 <i>Recurrent neural network</i> | 62 |
| 3.1.3 Pemodelan <i>wavelet recurrent neuro fuzzy</i> | 71 |
| BAB IV STUDY KASUS | |
| 4.1. Deskripsi Data Penelitian | 78 |
| 4.2. Pemodelan <i>Wavelet Recurrent Neuro Fuzzy</i> (WRNF)..... | 79 |
| 4.2.1 Uji nonlinearitas data | 79 |
| 4.2.2 Preprosesing data menggunakan wavelet Haar . | 80 |
| 4.2.3 Pemilihan jaringan optimal <i>recurrent RNN</i> | 84 |
| 4.2.4 <i>Clustering</i> menggunakan FCM | 86 |
| 4.2.5 Pembelajaran RNN bagian antesenden | 87 |
| 4.2.6 Pemilihan RNN optimal..... | 88 |
| 4.2.7 Pembelajaran RNN bagian konsekuen..... | 90 |
| 4.2.8 Perbandingan model..... | 92 |
| 4.2.9 Uji Diagnostik dan peramalan..... | 96 |
| 4.2.10 Perbaikan model..... | 98 |



| | | |
|-----------------------|----------------------------------|-----|
| BAB V | KESIMPULAN | |
| | 5.1. Kesimpulan Penelitian | 99 |
| | 5.2. Saran | 105 |
| DAFTAR PUSTAKA | | 107 |
| LAMPIRAN | | 111 |