

## BAB V

### KESIMPULAN DAN SARAN

#### 5.1. Kesimpulan

Berdasarkan hasil pelatihan, pengujian, analisis, dan implementasi yang telah dilakukan oleh penulis, maka dapat disimpulkan bahwa sistem identifikasi dan verifikasi tanda tangan statik dengan menggunakan JST *backpropagation* telah berhasil dibangun.

Penelitian yang dilakukan telah mendapatkan parameter dan jenis *wavelet* yang cocok untuk mencapai hasil yang optimal dalam tahap-tahap sebagai berikut:

- a. Pelatihan dan simulasi Identifikasi Citra Tanda Tangan ini telah diperoleh hasil yang paling optimal yaitu menggunakan alihragam *Wavelet Haar*, alihragam pada level 4, dengan *learning rate* 0,12. Akurasi yang dicapai adalah 95,56%.
- b. Pengujian Identifikasi Citra Tanda Tangan ini, diperoleh akurasi 100%, yang berarti semua ID dapat dikenali.
- c. Pelatihan Verifikasi Citra Tanda Tangan ini adalah tahap untuk memecah *data store* menjadi *data store* kecil dengan masing-masing ID, kemudian sampel citra asli dan citra palsu dilatih dengan *rule* bahwa citra asli akan bernilai 1 sedangkan citra palsu bernilai 0. Semua ID dapat memberikan nilai yang sesuai pada masing-masing jenis citra asli dan palsu, sehingga akurasi yang tercapai adalah 100%.

d. Pengujian Verifikasi Citra Tanda Tangan ini melibatkan 15 *data store* kecil (*data store* tiap individu) dan masing-masing ID diujikan dengan tiga citra palsu. Total citra yang digunakan seluruhnya adalah 90 citra dan hasil yang diberikan setelah pengujian ini didapat 3 citra palsu yang dianggap asli. Akurasi yang dicapai pada tahap akhir ini adalah 96,67%

## 5.2. Saran

Pada hasil pengujian yang telah dilakukan, terdapat hal yang masih menjadi masalah yaitu kemampuan mengenali pola tanda tangan yang ditulis menggunakan pena dengan ketebalan yang cukup tipis dan hasil tanda tangan yang tidak konsisten. Hal tersebut dapat menyebabkan bobot yang dihasilkan juga tidak konsisten sehingga sangat mudah untuk dilakukan pemalsuan. Penulis menyarankan perlunya melakukan proses perbaikan atau penambahan teknik supaya dapat mendeteksi dan mengenali pola dalam berbagai ketebalan alat tulis yang digunakan. Rotasi dan penskalaan yang bervariasi perlu diteliti lebih lanjut untuk mendapatkan akurasi yang lebih optimal.

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