

Signature Identification Menggunakan Metode Template Matching dan Fuzzy K-Nearest Neighbor

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Abstract — Signature is the result of the process of writing a person of a particular nature as a symbolic substance, which means a symbol or mark. Signature is usually used as an identifying mark of a person, each person must have his own signature in a different pattern. Because it's used as a person's identifying badge, Signatures now become particularly susceptible to counterfeiting and abuse that require check with a signature pattern recognition. This research has created a signature pattern recognition system using methods *Template Matching* and *Fuzzy K-Nearest Neighbor* to help recognize a person's signature pattern. The number of signatures used is 110 in two categories: the original signature with 100 data and the false signature with 10 data, and there were 10 classes taken using smartphone cameras. From this research, it was found that the best value from the image size of 200x200 pixels was 92% of the class that owned the signature legible, *Positive Predictive Value* (PPV) 88% and *False Rejection Rate* (FRR) 12%, with a k=3 on the original signature, and 90% of the class that owned the signature legible, *Negative Predictive Value* (NPV) 90% dan *False Acceptance Rate* (FAR) 10% with a k=9 on the false signature. From these results, it could be concluded that methods *Template Matching* and *Fuzzy K-Nearest Neighbor* could be used for signature pattern recognition.

Keywords: *Pattern, Signature, Template Matching, Fuzzy K-Nearest Neighbor*

DAFTAR PUSTAKA

- [1]. Anugerah, A.S.P., Indriati. & Dewi, C. "Implementasi Algoritma Fuzzy K-Nearest Neighbor untuk Penentuan Lulus Tepat Waktu (Studi Kasus: Fakultas Ilmu Komputer Universitas Brawijaya)". *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, Vol. 2, No. 4, pp. 1726-1732, 2018.
- [2]. Nurjanah N, F Andi, F Indriani. "Implementasi Metode Fuzzy C-Means Pada Sistem Clustering data Varietas Padi" *Jurnal Klik-Kumpulan Jurnal Ilmu Komputer 1 (1)*, 23-32.
- [3]. Prasetyo, E. "Fuzzy K-Nearest Neighbor in Every Class Untuk Klasifikasi Data". *Seminar Nasional Teknik Informatika (SANTIKA 2012), Surabaya, Universitas Pembangunan Nasional Veteran*, pp. 57-60, 2012.
- [4]. Sandy, W.K., Widodo, A.W. & Sari Y.A. "Penentuan Keaslian Tanda Tangan Menggunakan Shape Feature Extraction Techniques Dengan Metode Klasifikasi K Nearest Neighbor dan Mean Average Precision". *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, Vol. 2, No. 3, pp. 1083-1091, 2018.
- [5]. Trianto, R., Merdekawati, N.N.D., Nugraha, R.P.S., Astiti, D.N.Y. & Atmojo, H.G.T. "Klasifikasi Huruf Katakana Dengan Metode Template Matching Correlation". *Universitas Brawijaya, Malang*, 2014.
- [6]. Wijayanti, M., Sanjaya, A. & Pamungkas, D.P. "Implementasi Template Matching Correlation dan K – Nearest Neighbor untuk Mendeteksi Hukum Bacaan Tajwid pada Citra Tulisan Al-Qur'an". *Simki-Techsain*, Vol.2, No. 9, 2018.

- [7]. Widodo, A.W., & Harjoko, A. "Sistem Verifikasi Tanda Tangan Off-line berdasar Ciri Histogram of Oriented Gradient (HOG) dan Histogram of Curvature (HoC)". *Jurnal Teknologi Informasi dan Ilmu Komputer*, Vol. 2, No. 1, pp.1-10, 2015.
- [8]. Zaitun, Warsito. & Pauzi, G.A. "Sistem Identifikasi dan Pengenalan Pola Citra Tanda-Tangan Menggunakan Sistem Jaringan Saraf Tiruan (Artificial Neural Networks) Dengan Metode Backpropagation". *Jurnal Teori dan Aplikasi Fisika*, Vol. 03, No. 02, 2015.