

**EKSTRAKSI CIRI CITRA ULTRASONOGRAFI KULIT HEWAN ASLI BERBASIS
FITUR *GRAY LEVEL CO-OCCURANCE MATRIX* (GLCM) UNTUK MEMBEDAKAN
KULIT HEWAN ASLI DAN KULIT SINTETIS**

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Telah dilakukan penelitian tentang pemanfaatan pencitraan ultrasonografi dengan alat USG Mindray DP-220 untuk membedakan kulit hewan asli dan sintetis. Produk-produk berbahan dasar kulit hewan yang beredar di pasaran antara lain dompet, mantel, sepatu, dan tas. Selain terbuat dari kulit hewan asli, produk tersebut ada yang terbuat dari bahan buatan atau disebut juga kulit sintetis. Tujuan penelitian ini adalah untuk memberikan panduan kepada konsumen agar dapat membedakan antara kulit asli dan sintetis saat berbelanja produk kulit. Selain meningkatkan kesadaran konsumen akan keaslian produk yang mereka beli, penelitian ini juga mendukung industri kulit yang berkelanjutan. Pencitraan Ultrasonografi dapat menjadi solusi untuk membedakan kulit hewan asli dan sintetis, dengan alat USG Mindray DP-220. Metode penelitian melibatkan ekstraksi fitur tekstur menggunakan *Gray Level Co-Occurrence Matrix* (GLCM) dari berbagai jenis kulit hewan asli dan sintetis, dengan variasi frekuensi pada tingkat yang berbeda. Kulit hewan yang digunakan meliputi sapi, kambing, kuda, biawak, dan ular, sementara kulit sintetis terbuat dari Polivinil Klorida (PVC) dan Poliuretan (PU). Variasi frekuensi ultrasonik 2,5 MHz, 3,5 MHz, dan 5 MHz diamati untuk mengevaluasi pengaruhnya terhadap gambar yang dihasilkan. Hasil penelitian menunjukkan bahwa citra kulit hewan asli memiliki kecerahan yang lebih tinggi daripada kulit sintetis, dengan perbedaan fitur GLCM antara keduanya, seperti kontras, korelasi, homogenitas, dan energi. Diharapkan hasil ini dapat membantu konsumen dalam membuat keputusan yang lebih cerdas saat membeli produk berbahan dasar kulit serta memfasilitasi pengembangan teknologi untuk identifikasi kulit asli dan sintetis di masa depan.

Kata Kunci : Ultrasonografi, Citra, GLCM, Kulit Hewan Asli, Kulit Sintetis

ABSTRACT

EXTRACTION OF ULTRASOUND IMAGE FEATURES OF GENUINE ANIMAL SKIN BASED ON GRAY LEVEL CO-OCCURRENCE MATRIX (GLCM) FEATURES TO DIFFERENTIATE GENUINE ANIMAL SKIN AND SYNTHETIC LEATHER

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Research has been conducted on the utilization of ultrasonography imaging with the USG Mindray DP-220 device to differentiate between genuine and synthetic animal skin. Products made from animal skin such as wallets, coats, shoes, and bags are available in the market, some of which are made from synthetic materials or what is known as synthetic leather. The purpose of this research is to provide guidance to consumers in distinguishing between genuine and synthetic leather when purchasing leather products. In addition to increasing consumer awareness of the authenticity of the products they purchase; this research also supports sustainable leather industry. Ultrasonography Imaging can be a solution to differentiate between genuine and synthetic animal skin, utilizing the USG Mindray DP-220 device. The research methodology involves extracting texture features using Gray Level Co-Occurrence Matrix (GLCM) from various types of genuine and synthetic animal skin, with variations in frequency at different levels. Animal skins used include cow, goat, horse, monitor lizard, and snake, while synthetic skins are made from Polyvinyl Chloride (PVC) and Polyurethane (PU). Ultrasonic frequency variations of 2.5 MHz, 3.5 MHz, and 5 MHz were observed to evaluate their influence on the resulting images. The research results indicate that images of genuine animal skin have higher brightness compared to synthetic skin, with differences in GLCM features between them, such as contrast, correlation, homogeneity, and energy. It is hoped that these results can assist consumers in making smarter decisions when purchasing leather-based products and facilitate the development of technology for identifying genuine and synthetic leather in the future.

Keywords: Ultrasonography, Imaging, GLCM, Genuine Animal Leather, Synthetic Leather.