

ABSTRACT

DESIGN AND DEVELOPMENT OF A PURITY IDENTIFICATION TOOL FOR BLENDING LUWAK AND ARABICA COFFEE AROMA USING ELECTRONIC NOSE WITH BACKPROPAGATION ANN METHOD

BY

RIANTIKA FITRI

Coffee is one of the important plantation commodities in the economy, serving as a source of foreign exchange for the country. With the increasing coffee consumption in society, particularly due to lifestyle changes and technology, the quality of coffee is gaining more attention. Aroma is a crucial attribute in assessing coffee quality. This study aims to build an architecture of Artificial Neural Networks (ANN) to identify the purity of the aroma of luwak and arabica coffee powder, and to integrate it into a purity identification tool based on aroma. The method used is an e-nose sensor with pattern recognition through ANN. The samples analyzed include 100% luwak coffee powder, 100% arabica, and various mixtures (50%-50%, 75%-25%, and 25%-75%). The research results show purity predictions: the 100% mixture reached 98%, 75% was 75%, 50% was 64%, 25% was 69%, and the 0% mixture was 98%. These results demonstrate the potential of ANN in identifying the purity of coffee aromas. This result shows that the e-nose sensor can detect the purity of coffee powder with an accuracy of up to 98% within 0 to 20 minutes.

Keywords: coffee, sensor, artificial neural networks

ABSTRAK

RANCANG BANGUN ALAT *IDENTIFIKASI* KEMURNIAN AROMA BUBUK KOPI *BLENDING* KOPI LUWAK DAN KOPI ARABIKA DENGAN *ELECTRONIC NOSE* MENGUNAKAN METODE *JST BACKPROPAGATION*

OLEH

RIANTIKA FITRI

Kopi merupakan salah satu komoditas perkebunan yang penting dalam perekonomian, berperan sebagai penghasil devisa negara. Dengan meningkatnya konsumsi kopi di masyarakat, terutama karena gaya hidup dan teknologi, kualitas kopi semakin diperhatikan. Aroma merupakan salah satu sifat penting dalam menilai kualitas kopi. Penelitian ini bertujuan membangun arsitektur Jaringan Saraf Tiruan (JST) untuk mengidentifikasi kemurniaan aroma bubuk kopi luwak dan arabika, serta mengintegrasikannya ke dalam alat identifikasi kemurnian kopi berdasarkan aroma. Metode yang digunakan adalah sensor e-nose dengan pengenalan pola JST. Sampel yang dianalisis meliputi bubuk kopi luwak 100%, arabika 100%, serta variasi campuran (50%-50%, 75%-25%, dan 25%-75%). Hasil penelitian menunjukkan prediksi kemurnian: campuran 100% mencapai 98%, 75% sebesar 75%, 50% sebesar 64%, 25% sebesar 69%, dan campuran 0% sebesar 98%. Hasil ini menunjukkan bahwa sensor *e-nose* mampu mendeteksi kemurnian bubuk kopi dengan akurasi sampai dengan 98% dalam waktu 0 sampai dengan 20 menit.

Kata kunci: kopi, sensor, jaringan saraf tiruan