

## **Multivariate prediction model for early detection and classification of bacterial species in diabetic foot ulcers**

### **Abstract**

Many diabetic patients eventually develop foot ulcers are at risk for further infection and subsequent amputation if they are not treated promptly. Hence, this study is focused on identifying wild type strain bacteria and standard ATCC bacteria using e-nose which are PEN3 and Cyranose320. Data collected from both e-nose are processed using multivariate classifier such as LDA, KNN, PNN, SVM and RBF. The results indicate that rapid detection of bacteria using e-nose has increased the effectiveness, efficiency, reliability and reduced diagnosis time in identifying bacterial species on foot ulcer infection.

**Keywords** — Diabetic, foot ulcer, e-nose, PEN3, Cyranose320, LDA, KNN, PNN, SVM, RBF.