

# Identification of Antibiotic Resistance in FTIR Spectra of Bacteria with Machine Learning Algorithms

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The application of computational tools and data analysis in scientific studies has seen significant advances in recent years. This offers a versatile approach to, for example, solving problems related to image segmentation, cluster identification and segmentation of microstructural constituents in images. The combination of these computational tools with data analysis represents innovative approaches that have the potential to significantly impact scientific studies, particularly in the areas of science and materials, and currently also in application to health. Their ability to solve complex problems and improve the accuracy of analyzes makes them valuable tools for researchers to contribute to the advancement of science and also to help care for people's health. Bacterial resistance to antibiotics is becoming a global health-care problem. One of the important measures to tackle this problem is fast detection bacterial antibiotic susceptibility. In this study has been developed the identification of resistance to antibiotic in *Staphylococcus aureus* by mean of machine learning implementation in data analyses of Fourier-Transform Infrared Spectroscopy (FTIR) spectra, we found promisor results in samples with and without antibiotic resistance develop.