

# MSc Project Report

## Predicting the malignant transformation risk of oral submucous fibrosis (OSF)

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2022

A report submitted as part of the requirements for the degree of MSc Big  
Data Analytics at Robert Gordon University, Aberdeen, Scotland

## **Abstract**

Oral submucous fibrosis is an oral disease that could be seen among the population in South Asian countries. It starts with inflammation in any part of the oral cavity which leads to changes in fibers, causing stiffness in the oral mucosa (wet part of the oral cavity), The patient will experience difficulties in opening mouth and moving tongue which makes it difficult to consume food. This is a progressive disease that has a considerable risk of transforming into oral cancer. Due to this risk patient with Oral submucous fibrosis should be kept under regular medical checks to make sure their condition is not getting transformed into cancer and identify such cases as soon as possible. Knowing the level of risk of transforming into a cancer situation would be helpful to determine the level of observation that should be kept on a particular patient. Patients with high risk should be kept under regular observation while patients with low risks could be observed with less frequency. This would be helpful to use the constrained medical resources in an optimal way to address high risk cases while refraining from overtreating low-risk cases. The focus of this research is to utilize few machine learning techniques, namely Deep neural networks, Logistic regression, Support vector machine (SVM), and Random Forest to determine the cancer transformation risk of Oral submucous fibrosis patients based on their clinical history, so they could be categorized and observed accordingly.

Keywords: OSF, Oral cancer risk prediction, Deep Neural Networks, Logistic Regression, Support Vector machine, Random Forest