



## A weighted mixture of mixtures model with applications in medical physics

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### Abstract:

An applied problem in medical physics, specifically Raman spectroscopy, will be introduced with previous modelling attempts briefly reviewed. We will then propose that the observed data can be viewed through the lens of a weighted mixture of mixtures model, and showcase it as an interesting alternative to non-negative matrix factorization. The model is developed under an expectation-maximization model-fitting approach in a weighted-likelihood framework. Finally, some results on simulations will be given along with preliminary analysis of real data (time permitting).