RAMAN SPECTROSCOPY DECONVOLUTION USING STACKED AUTO-ENCODERS WITH NON-NEGATIVITY CONSTRAINTS

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ABSTRACT

***Index Terms*—** One, two, three, four, five

1. INTRODUCTION

Surface-enhanced Raman scattering

Hotspots, complex mixture in raman spectra.

NMF/MCR for source seperation and mixture classification.

Computational heavy for increased resolution of Raman spectras.

Sparse autoencoder

2. PRIOR WORK

Primary reference [1]

3. METHODS

Dataset origin, description of wavenumbers, raman map size. Definitions for the rest of the paper.

Compare with NMF?

3.1. Non-negativity constraint

Primary reference implementation. Describe the constraint and the training architecture

3.2. Latent-space classification

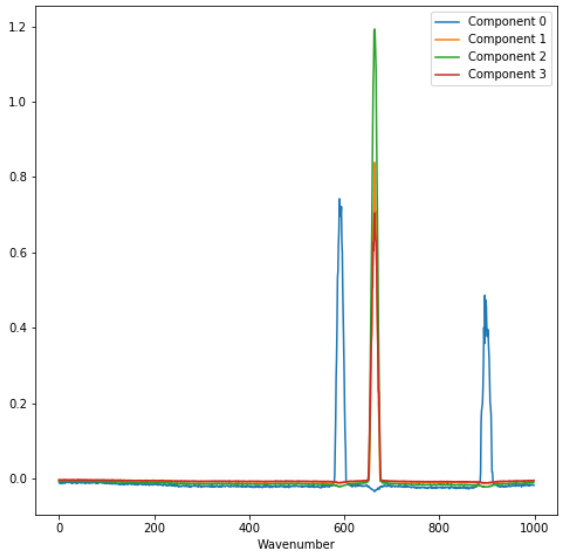
classification based on latent-space by compression of sparse autoencoders.

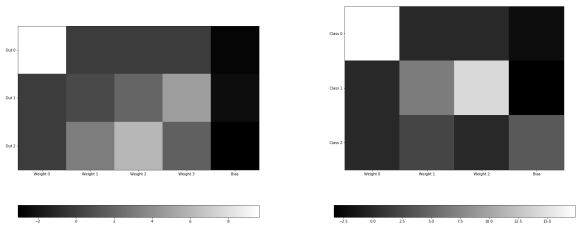
4. RESULTS

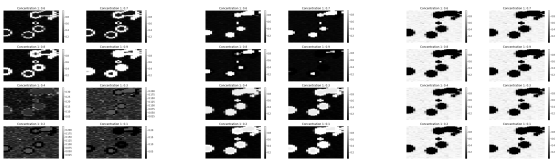
Training and test data.

Encodings and basis vectors

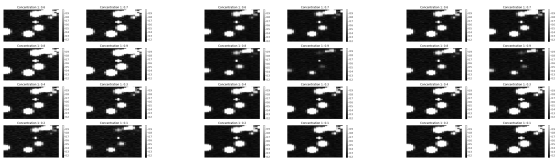
Classifier results

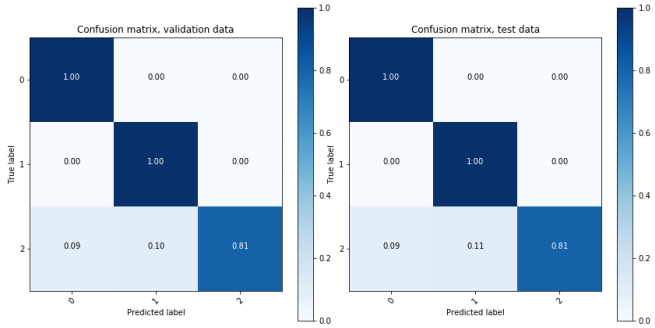






Thanks to XYZ agency for funding.

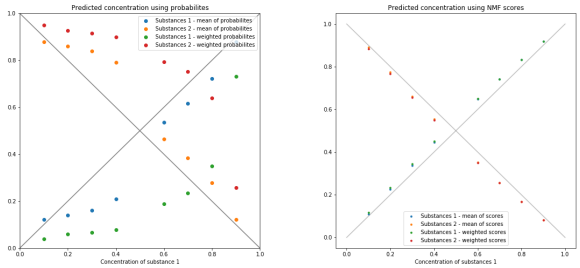




5. DISCUSSION

Comparison with NMF

6. CONCLUSION



7. REFERENCES

List and number all bibliographical references at the end of the paper. The references can be numbered in alphabetic order or in order of appearance in the document. When referring to them in the text, type the corresponding reference number in square brackets as shown at the end of this sentence .

8. REFERENCES

[1] Ehsan Hosseini-Asl, Jacek M. Zurada, and Olfa Nasraoui, "Deep Learning of Part-Based Representation of Data Using Sparse Autoencoders With Nonnegativity Constraints," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 27, no. 12, pp. 2486–2498, dec 2016.