

Applied Mathematics Seminar



Prof. Zachary DeBruine

Asst. Professor- Dept. of Computing - GVSU

Friday, October 7 1-1:50pm

MAK A2-167 or [via zoom](#) (request password from ortizron at gvsu dot edu)

Extension and Optimization of Non-negative Matrix Factorization

Abstract: Non-negative Matrix Factorization is a popular dimensional reduction technique which can learn additive and colinear signals underlying a dataset. For example, given a dataset of faces, NMF can learn parts of the face as individual signals. NMF traditionally has been too slow to scale to very large applications, and is not robust. We have developed the world's fastest implementation of NMF in C++, and developed a user-friendly R package to make this implementation available to data scientists. Our implementation also includes key theoretical improvements that improve model robustness and facilitate rank determination. We have applied NMF to some of the biggest datasets in biology to answer fundamental questions about how our DNA shapes our phenotype. In ongoing research, we are extending NMF using graph regularizations to incorporate complimentary information about samples or features into NMF models.



More info: <http://bit.ly/applied-math-seminar>

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