

# Stańczyk and Matrix Decompositions

## A Quick Taste of SVD, NMF, CUR

Course: Matrix Decompositions with R



Jan Matejko: *Stańczyk* (1862)

# SVD — Singular Value Decomposition

**SVD:  $k = 4$**



**SVD:  $k = 8$**



**SVD:  $k = 16$**



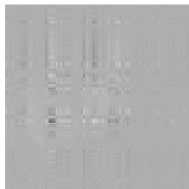
**SVD:  $k = 32$**



“Mathematically optimal... but still a bit dreamy.”

# CUR — Matrix Approximation

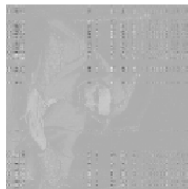
CUR:  $k = 4$



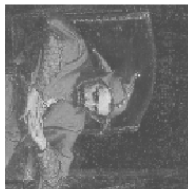
CUR:  $k = 8$



CUR:  $k = 16$



CUR:  $k = 32$



“Fast and frugal... Stańczyk on a budget.”

# NMF — Nonnegative Matrix Factorization

NMF:  $k = 4$



NMF:  $k = 8$



NMF:  $k = 16$



NMF:  $k = 32$



“Pieces of the puzzle... Stańczyk in parts.”

Coming to your R console soon!  
Starring: **SVD**, **NMF**, **CUR**  
in the role of data approximations.  
Grab your keyboard and join the show!