## Supplemental script

Script for decomposition of the setation matrix into the trunk limb and group setation vectors.

import numpy

import math

def get\_norm (data, x, y):

 norm = 0

 for i in range(n):

 for j in range(m):

 norm += (x[i]\*y[j] - float(data[i][j]))\*\*2

 norm = math.sqrt(norm)

 return norm

def decomposition (data):

 dataTdata = [[0 for j in range (m)] for i in range (m)]

 for i in range(m):

 for j in range(m):

 for k in range(n):

 dataTdata[i][j] += (data[k][i])\*(data[k][j])

 eigenvectors\_y = numpy.linalg.eig(dataTdata)[1]

 good\_norm = 100000000

 for i in range(0, m):

 vector\_y = [0 for k in range(m)]

 for j in range(m):

 vector\_y[j] = eigenvectors\_y[j][i]

 vector\_x = [0 for i in range(n)]

 for i in range(n):

 for j in range(m):

 vector\_x[i] += (data[i][j])\*(vector\_y[j])

 new\_norm = get\_norm (data, vector\_x, vector\_y)

 if new\_norm < good\_norm:

 x = vector\_x

 y = vector\_y

 good\_norm = new\_norm

 return x, y, good\_norm