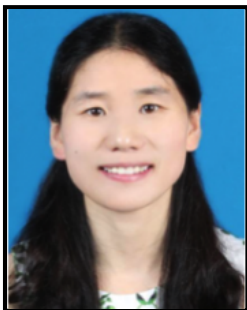




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## Computational Mathematics Seminar Series

**A Joint Matrix Minimization Approach and the Applications in Collective Face Recognition and Seismic Wavefield Recovery****Liping Wang, Nanjing University of Aeronautics and Astronautics**

Associate Professor

Digital Media Center 1034  
March 13, 2018 - 03:30 pm**Abstract:**

Recently, image-set based face recognition and multi-trace seismic wavefield recovery have attracted extensive attention in pattern recognition and geophysical community. Representation coding is one of popular ways for both face recognition and seismic wave reconstruction. Similar representative coding pattern among the group of samples is observed both in facial images and seismic signals. To take account of the collective correlation from a given set of testing samples as well as each individual, a matrix minimization model is presented to jointly representing all the testing samples over the coding bases simultaneously. A generalized matrix norm  $\|L\|_{(2,p)}$  ( $0 < p \leq 1$ ) is employed to measure the interrelation of the multiple samples and the entries of each one. For solving the involved matrix optimization problem, a unified algorithm is developed and the convergence analysis is accordingly demonstrated for the range of parameters  $p$  in  $(0,1]$ . Extensive experiments on public data of facial images and real-world seismic waves exhibit the efficient performance of the joint technique over the state-of-the-art methods in recognition or recovery accuracy and computational cost.

**Keywords:** joint matrix minimization, collective face recognition, seismic wavefield recovery, representation coding**Speaker's Bio:**

Liping Wang received the B.Sc. degree in Mathematics from Qufu Normal University in 1998. In 2001, she received the M.Sc. degree in Mathematics from Nanjing University. And she also received her Ph.D degree from Institute of Computational Mathematics and Scientific/Engineering Computing of the Chinese Academy of Sciences in 2004. Now she works as an associate professor in Department of Mathematics, Nanjing University of Aeronautics and Astronautics. Her research interests include numerical optimization and pattern recognition.

**This lecture has refreshments @ 03:00 pm**