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Detection of moving objects through turbulent media.
 Decomposition of Oscillatory vs Non-Oscillatory
 spatio-temporal vector fields

J. Gilles^{a,*}, F. Alvarez^a, N. Ferrante^a, M. Fortman^b, L. Tahir^c, A. Tarter^d, A. von Seeger^e

^a*Department of Mathematics & Statistics, San Diego State University, San Diego, 5500 Campanile Dr, CA 92182, USA*

^b*Lake Forest College, LFC #582, 555 N Sheridan Rd, Lake Forest, IL 60045, USA*

^c*Mills College, 5000 MacArthur Blvd, Oakland, CA 94613, USA*

^d*Creighton University, 2500 California Plaza, Omaha, NE 68178, USA*

^e*Department of Mathematics, Georgetown University, 327A St. Mary's Hall, 3700 O St NW, Washington D.C. 20057, USA*

Abstract

In this paper, we investigate how moving objects can be detected when images are impacted by atmospheric turbulence. We present a geometric spatio-temporal point of view to the problem and show that it is possible to distinguish movement due to the turbulence vs. moving objects. To perform this task, we propose an extension of 2D cartoon+texture decomposition algorithms to 3D vector fields. Our algorithm is based on curvelet spaces which permit to better characterize the movement flow geometry. We present experiments on real data which illustrate the efficiency of the proposed method.

Keywords: Moving object detection, atmospheric turbulence, decomposition, curvelet spaces

*Corresponding author

Email addresses: jgilles@mail.sdsu.edu (J. Gilles), aalvarez.fr@gmail.com (F. Alvarez), nicholas.b.ferrante@icloud.com (N. Ferrante), fortmanma@mx.lakeforest.edu (M. Fortman), ltahir@mills.edu (L. Tahir), act72583@creighton.edu (A. Tarter), amv48@georgetown.edu (A. von Seeger)

URL: <http://jegilles.sdsu.edu> (J. Gilles)

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