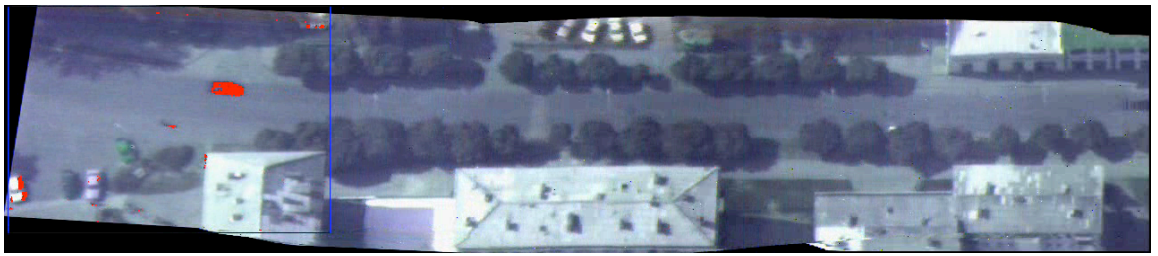
Image Mosaicing and Super Resolution from Video Sequences



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BRIEF DESCRIPTION OF DEMONSTRATION

Dynamic sequences, such as sports broadcast, video surveillance and airborne monitoring, are characterized by significant camera motion and moving objects. Extraction of the background (*i.e.* static part of the scene) can be used to enhance image quality and/or to detect and track moving players. Our solution to this problem is based on the stabilization of camera motion and the construction of a mosaic. We use a graph-based technique to represent the spatial and temporal connectivity between frames, and the global registration of the video is performed by a search of an optimal path in the graph. The technique computes globally registered mosaics of video sequences of dynamic scenes allowing us to detect and track moving objects in the scene.

UNIQUE OR DISTINGUISHING CHARACTERISTICS RELATIVE TO STATE-OF-THE-ART

- Spatio-temporal representation of frames connectivity.
- Global mosaic inferred through an optimal path in the graph.
- Global registration of image sequences with moving objects.

APPLICATIONS

- Video surveillance
- Unmanned Aerial Vehicles
- Image enhancement
- Sports broadcasting

RECENT HIGHLIGHTS, LEVEL OF DEVELOPMENT, UPCOMING MILESTONES

- Robust pair-wise registration improving global registration
- Shape coding towards video compression
- Super-resolution

UNDERLYING TECHNOLOGIES

- Graph-based search algorithm
- Pairwise registration of frames and global alignment of frames
- Image stabilization and motion estimation

LIST OF PUBLICATIONS, REFERENCES, URLs

- Eun-Young Kang, Isaac Cohen and Gérard Medioni, "A Graph-Based Global Registration for 2D Mosaics", *15th International Conference on Pattern Recognition(ICPR), 2000, Barcelona, Spain*
- http://iris.usc.edu/~icohen
- http://iris.usc.edu/~elkang

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