



ISSN (Print) : 2320 – 3765  
ISSN (Online): 2278 – 8875

# International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijareeie.com](http://www.ijareeie.com)

Vol. 8, Issue 1, January 2019

## Realization of Panoramic Image Model of Aerial Data using Stitching Technique

Dr R Athi lingam<sup>1</sup>

Associate Professor, Department of Electronics and Communication Engineering, Nadar Saraswathi College of  
Engineering and Technology, Theni, Tamilnadu, India<sup>1</sup>

**ABSTRACT:** Panoramic view is recent area of research based on needs in the field of aerial surveillance. Multiple images taken by Unmanned Aerial Vehicles (UAV) which possess mutual object of interest is to be stitched together in order to obtain the panoramic view of the survey area. Panoramic image stitching is mainly used to create virtual environment for many applications. It is a key technology in 3D realization, Geo referenced mapping and target localization and lots of stitching algorithms are being under development in recent years.

This paper proposes a panorama image stitching system which combines an image matching algorithm based on corner detection and backward image blending algorithm. The application is focused towards generation of panoramic view of the images captured by the Unmanned Aerial Vehicle. The algorithm is designed to be extremely efficient and fast in its execution and is intended for use in stitching images captured by UAV. The algorithm works by extracting informations in the corners of the two images to be stitched. To get the scene image of wide view field, firstly block matching based on corner detection is applied to estimate the motion vector field, and then the parameters of transformation model can be calculated with the backward algorithm to implement image sequence stitching. The efficiency is higher in our approach than traditional techniques since our approach can stitch more than two images

**KEYWORDS:** Image Stitching, Panorama view , UAV , corner detection, block matching, Aerial Surveillance

### I. INTRODUCTION

Image stitching is a technology that carries on image matching and blending to image sequences which are overlapped with one other, and finally builds a high quality panorama photo with high resolution and wide field view [1,2]. The image stitching process mainly includes image matching and image blending.

The key problem of image stitching is how to realize the image matching, by which find the matching parameters among the images. At present, image matching can be categorized two methods namely region-based method and feature-based method. Region-based method [3, 4] is to use the image grey-scale information to determine the matching parameters between images, which make full use of the image information but it involves amount of calculation. Moreover, in the presence of image noise, image distortion and large scaling and rotation between images, the obtained stitching results are often not the correct. Feature-based method [5, 6] makes use of the distinct image features such as image contours and corners to realize the image matching with less calculation, further this method have higher robustness in case of the scaling and rotation between images, the correct feature extraction of images is very important to match the image to stitch rightly. The concept of processing between two consequent frames is described in [10]. The description about design mechanism of quadcopter (UAV) and its aerodynamic derivations are described in [11].

The paper is organized as follows. In Section II image matching technique is discussed. In section III blending and stitching techniques are discussed. In section IV, the implementation of the proposed work is done and finally in Section V the results are discussed. The conclusions are made in section VI.

### II. IMAGE MATCHING BASED ON CORNER DETECTION

Image stitching of the two or more frames is key to find out exactly adjacent two images overlap of the location, and then determining the transformation relations between two images, namely image matching. Image

