

## Digital data security and hiding on virtual reality video 3D GIS

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**Abstract.** Today's Information Technology supports varieties of e-commerce, in particular on-demand services such as news, message, seminar and presentation speech, Video and 3D Video GIS which is getting more popular as it shows the situation with respect to the location. Each service can have value-added by embedding other hidden-service within the main service, hence promoting value-added to the service. The value-added services are accomplished by using the technique of Multiple Keys and Messages Embedding (MKME), which hidden-contents can be retrieved only by applying the correct corresponding decryption keys. This paper presents the design and algorithm for multiple keys and messages embedding on 3D Video GIS which contains a series of Geo-spatial Video Imagery, based on Steganography concept. The quality of the resulting product is also investigated. Geo-spatial Video Imagery is 360 degree video embedded with GPS information that can be integrated into any mapping application. Geo-spatial Video Imagery enables users to travel down the street - for a natural street view - and look in every direction as if they were in the middle of the scene. Geo-spatial Video Imagery provides users with access to a specific location and enables them to see what the environment looks like, given them a complete perspective. Whether the application is for tourism via the web, navigation purposes or managing a large engineering project, desktop access to precise locations enables the user to experience the whole environment. Access to this imagery saves time, money and provides significant data eliminating the need for multiple visits to sites, properties and distant locales.

**Keywords:** 3D Video GIS, GPS, LSB, Steganography, embedded, virtual reality, embedding, multiple keys, digital media, encryption, decryption, encode, decode, video graphic vector

### 1 Introduction

Digital communication has become an essential part of infrastructure nowadays, a lot of applications are Internet-based and in some cases it is desired that the communication be made secret and secure. Two techniques are available to achieve this goal: one is cryptography, where the sender uses an encryption key to scramble the message, this scrambled message is transmitted through the insecure public channel, and the reconstruction of the original, unencrypted message is possible only if the receiver has the appropriate decryption key. The second method is Steganography<sup>[3, 5, 7, 9, 12, 16]</sup> where the secret message is embedded in another message. Using this technology even the fact that a secret is being transmitted has to be secret.

This research includes the assuage of 3D Video for Steganography, which gives a better visualization of space i.e. all 360 degree surrounding and hereby result in getting the whole world on your desktop. This is better for handicap people in order to visualize as they may not reach to the destination in real world but can feel the surrounding by sitting at home.

Many researchers have researched a lot of Steganography techniques on still images but in this research I have used 360 degree image (as a cover media) which further combines and results in Movie File (AVI). First the data size is calculated and converted into binary and then the Discrete Cosine Transformation (DCT) is

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