BUILDING A VISION WEB APPLICATION USING DJANGO PYTHON

MALLADI MADHU, KORNALA VENKATESH
1 [1] **Assistant Professor MCA, DEPT,** Dantuluri Narayana Raju College, **Bhimavaram, Andhrapradesh**
Email id: kornalavenkatesh@gmail.com
[2]**PG Student of MSC(CS),** Dantuluri Narayana Raju College, **Bhimavaram, Andhrapradesh**
Email id: m.madhu0129@gmail.com

ABSTRACT

The infrared and visible image fusion task is an important problem in image processing field. It attempts to extract salient features from source images, and these features are integrated into a single image by appropriate fusion method. It is a novel deep learning architecture for infrared and visible images fusion problems. In contrast to conventional convolutional networks, our encoding network is combined with convolutional layers, a fusion layer, and dense block in which the output of each layer is connected to every other layer. We attempt to use this architecture to get more useful features from source images in the encoding process, and two fusion layers (fusion strategies) are designed to fuse these features. We useencoding network to extract image features and the fused image is obtainedby decoding network. The encoding network is constructed by convolutional layer and dense block in which the output of each layeris used as the input of next layer. Finally, the fused image will be reconstructed by fusion strategy and decoding network which includes four CNNlayers.

1. INTRODUCTION

The infrared and visible image fusion task is an important problem in image processingfield. It attempts to extract salient features from source images then these features are integrated into a single image by appropriate fusion method. For decades, these fusion methods achieve extraordinary fusion performance and are widely used in many applications, like video surveillance and militaryapplications.

OBJECTIVES:

The task is to propose a novel deep learning architecture which is constructed by encoding network and decoding network. We use encoding network to extract image features and the fused image is obtained by decoding network. The encoding network is constructed by convolutional layer and dense block in which the output of each layer is used as the inputof next layer. So in our deep learning architecture, the resultsof each layer in encoding network are utilized to construct featuremaps.

METHODOLOGY:

To fuse infrared and visible images a large collection of the images is required. The imagesare downloaded from the Mendeley database Powerline Image Dataset. In this section the methodology followed is

discussed in detail.

DATASET:

The dataset for the experiment is downloaded from the Mendeley database Powerline Image Dataset which contains different Infrared-IR and Visible Light-VL images and theirlabels. It contains a collection of images taken and the images were captured from 21 different regions all over Turkey at different seasonal days. Due to varying background behavior, varying temperatures and weather conditions, and varying lighting conditions, the achieved positive set contains several difficult scenes where low contrast causes close-to invisibility for power lines. The original video resolutionswere 576x325 for IR and full HD for VL, however, the captured frames were scaled down to smaller sizes and the effect of resizing was tested for various image sizes. Animage size of 128x128 is sufficient for consistently accurate power linerecognition.

2. LITERATURE SURVEY AND RELATED WORK

Conduct a thorough literature review by searching for relevant research papers, articles, and books related to infrared and visible image fusion. Summarize the key findings, methodologies, and trends inthis field. Mention any recent advancements or notable studies.

KEY-DEDUPLICATION WITH IBBE:

If "IBBE" refers to a specific technology or concept, please provide more context. Key deduplication typically involves identifying and eliminating duplicate keys or data in a database or storage system. Explain how this process works and its importance in data management.

SERVER LESS DISTRIBUTED FILE SYSTEM:

Discuss the concept of a serverless distributed file system, its benefitS(e.g., scalability, cost-efficiency), and use cases in cloud computing and modern software architectures.Mention any real-world examplesor platforms that implement this technology.

THE GOOGLE FILE SYSTEM:

Provide an overview of the Google File System (GFS), including its architecture, key features, and how itaddresses challenges in distributed file storage. Discuss its impact on the development of similar distributed file systems.

CONVERGENT KEY MANAGEMENT:

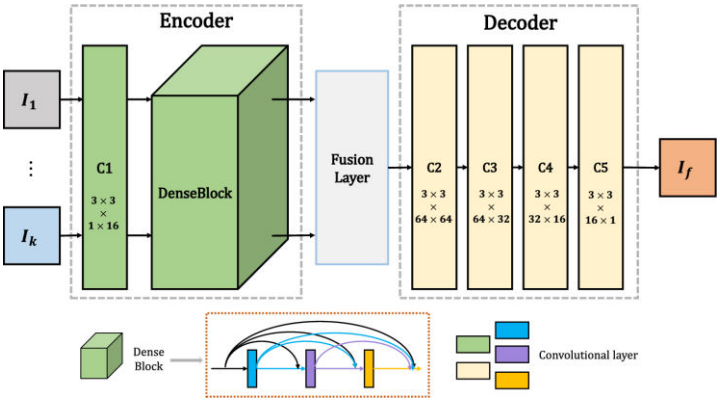
Explain the concept of convergent key management in data encryption and security. Describe how it works, its role in data deduplication, and its benefits in ensuring data confidentiality.

3. EXISTING SYSTEM

The existing system does not provide an integrated web-based platform for image processing using computer vision techniques. Users typically need programming skills toperform image analysis. There's a need for a user-friendly interface to bridge this gap.

4. PROPOSED SYSTEM

The proposed model is a novel deep learning architecture which is constructed by encoding network and decoding network. We use encoding network to extract image features and the fused image is obtained by decoding network. The encoding network is constructed by convolutional layer and dense block in which the output of each layer is used as the inputof next layer. So in our deep learning architecture, the results fused image will be reconstructed by fusion strategy and decoding network which includes four CNN layers.



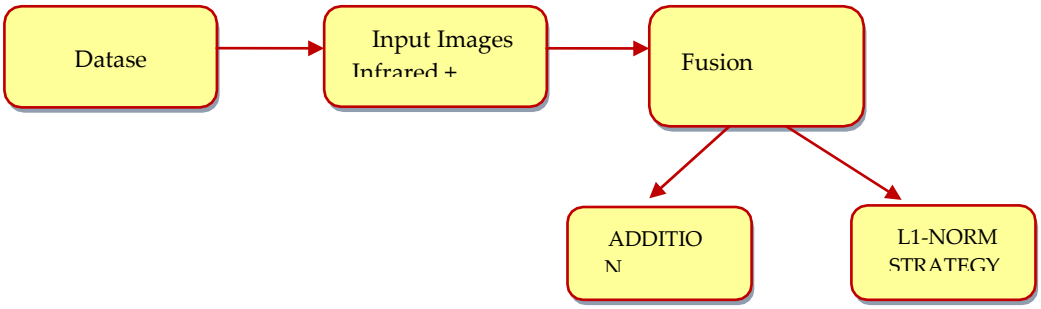


FIG 1:- **SYSTEM ARCHITECTURE**

5. METHODOLOGIES

MODULES

Tkinter:

Tkinteris the most commonly used library for developing GUI (Graphical User Interface)in Python. It is a standard Python interface to the Tk GUI toolkit shipped with Python. AsTk and Tkinterare available on most of the unixplatforms as well as on the Windows system, developing GUI applications with Tkinter becomes the fastest andeasiest.

Most of the time, tkinteris all you really need, but a number of additional modules are available as well. The Tk interface is located in a binary module named _tkinter. This module contains the low-level interface to Tk, and should never be used directly by application programmers. It is usually a shared library (or DLL), but might in some casesbe statically linked with the Python interpreter.

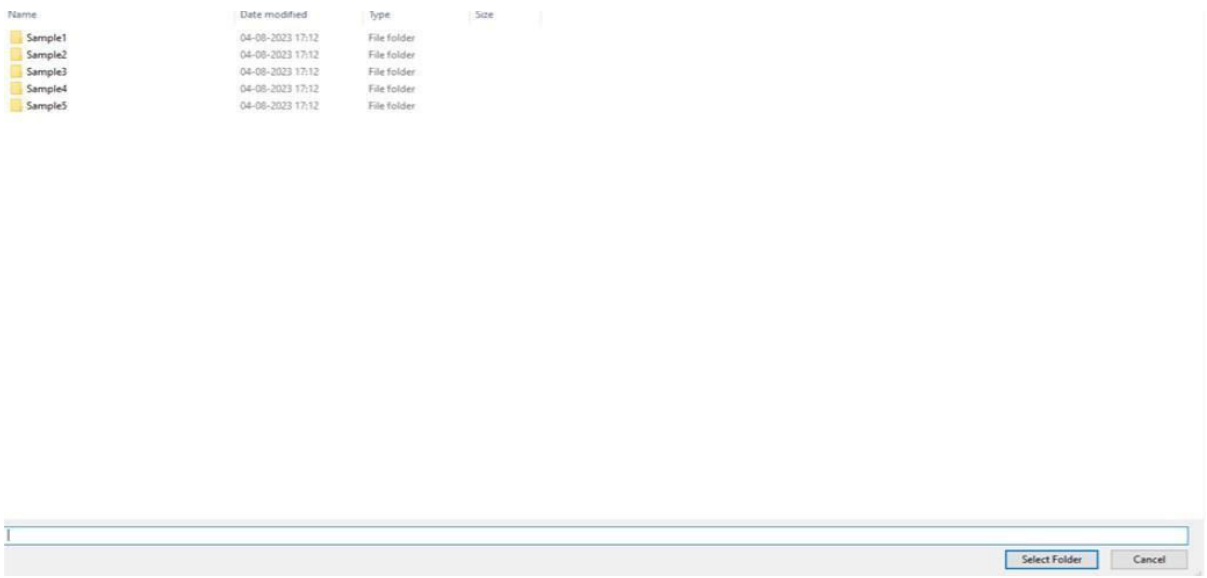
In addition to the Tk interface module, Tkinterincludes a number of Python modules, tkinter.constants being one of the most important.

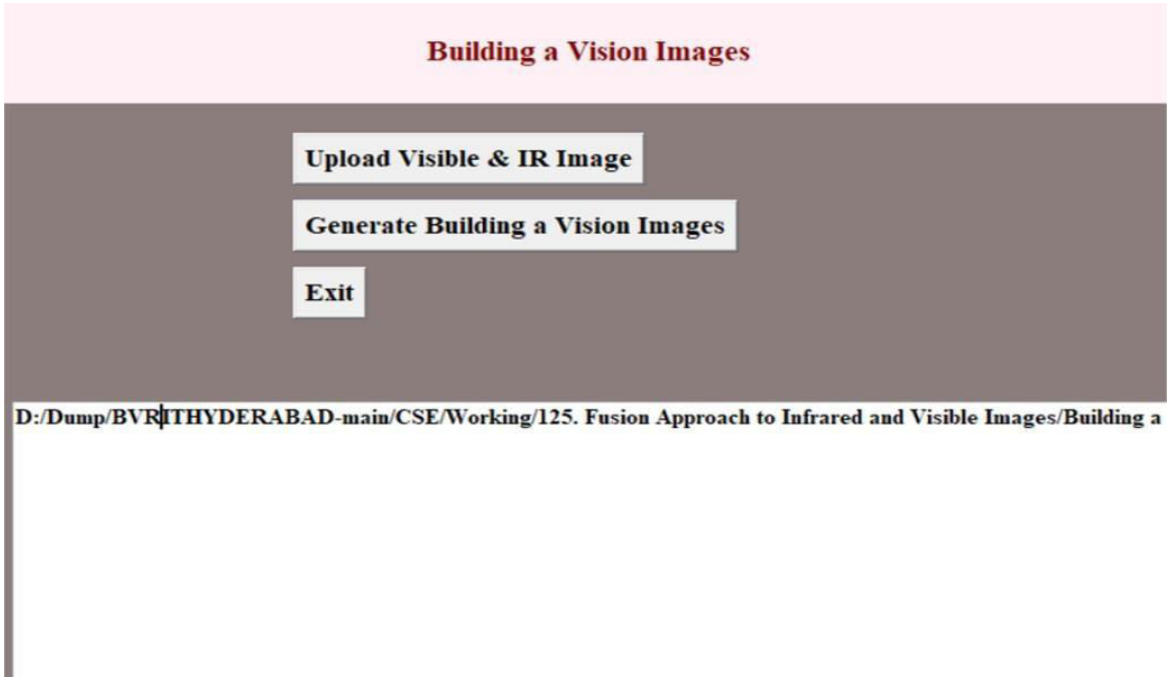
Powerline Image Dataset:

The dataset for the experiment is downloaded from the Mendeley database Powerline Image Dataset which contains different Infrared-IR and Visible Light-VL images and theirlabels. It contains a collection of images taken and the images were captured from 21 different regions all over Turkey at different seasonal days. Due to varying background behavior, varying temperatures and weather conditions, and varying lighting conditions, the achieved positive set contains several difficult scenes where low contrast causes close- to invisibility for power lines. The original video resolutionswere 576x325 for IR and fullHD for VL, however, the captured frames were scaled down to smaller sizes and the effectof resizing was tested for various image sizes. Animage size of 128x128 is sufficient for consistently accurate power linerecognition

6. RESULTS AND DISCUSSION SCREEN SHOTS

SCREENS


Name
Date modified
Type
Size
Sample1
04-08-2023 17:12
File folder
Sample2
04-08-2023 17:12
File folder
Sample3
04-08-2023 17:12
File folder
Sample4
04-08-2023 17:12
File folder
Sample5
04-08-2023 17:12
File folder
Select Folder
Cancel


Building a Vision Images
Upload Visible & IR Image
Generate Building a Vision Images
Exit
D:/Dump/BVRITHYDERABAD-main/CSE/Working/125. Fusion Approach to Infrared and Visible Images/Building a


Building a Vision Images
Upload Visible & IR Image
Generate Building a Vision Images
Infrared Image
Fuse_Image.png
Visible Image

7. CONCLUSION AND FUTURE SCOPE

CONCLUSION:

The Vision Web Application, built using Django, provides a user- friendly platform for uploading, processing, and analyzing images using computer vision techniques. By leveraging Django's robustness and flexibility, along with various computer vision libraries, the application offers a seamless user experience and enables users to gain insights from their uploaded images without extensive programming knowledge. The proposed system's modular design ensures flexibility for incorporating additional functionalities and advancements in computer vision technologies. The Vision Web Application opens up opportunities for a wide range of applications, including image analysis, object recognition,facial recognition, and more.

FUTURE SCOPE:

The future scope of infrared and visible image fusion lies in improving deep learning models, exploring new applications (e.g., medical imaging,autonomous vehicles), and addressing challenges like real-time processing and hardware acceleration.

8. REFERENCES

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