SYNOPSYS : IPMV MINI PROJECT 2B-2023-24

PROJECT NAME(Group Number)	CHAIN CODE DETECTION USING MATLAB SIMULINK (Group Number 16)
ELECTRONICS AND TELECOMMUNICATION ENGINEERING	

Vivekanand Education Society's Institute of Technology

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Subject Teacher Name	Mrugendra Vasmatkar
SEM/Year/CAY	VI/TE/2023-24
Problem Statement (Initial Goal)	In the field of image processing, the accurate detection and representation of object boundaries are essential for various applications such as object recognition, tracking, and analysis. Chain code detection is a fundamental technique used to represent object boundaries in digital images by encoding the direction of traversal along the boundary. The task at hand is to develop and implement a chain code detection algorithm using Simulink, a powerful tool for modeling and simulating dynamic systems.

OBJECTIVE(s)	1) Designing a chain code detection algorithm capable of accurately detecting object boundaries in digital images. 2) Implementing the algorithm using Simulink's graphical programming environment to create a model. 3) Validating the effectiveness and accuracy of the implemented algorithm through simulation and analysis. 4) Evaluating the computational efficiency and performance of the algorithm in terms of processing time and accuracy. 5) Providing insights into the strengths, limitations, and potential improvements of the developed chain code detection algorithm.
SPECIFIC:	The aim of this project is to improve the reliability of digital communication by error detection and error correction. Our team includes 4 members(Karan Shah,Piyush Tambe,Chirag Naskar,Anant Paranjape) who are responsible for whole project. The project is divided in following tasks are assigned to each member 1) Identification, Procurement of components and design: Chirag,Piyush,Karan,Anant 2) Simulink performance : Piyush,Chirag 3) Design & Implementation : Anant,Karan 4) Fault finding and correction : Chirag,Piyush,Karan,Anant
MEASURABLE:	At the completion of this project, our aim is to deliver an operational chain code detection system with well-defined performance metrics. The system will be evaluated based on the following measurable objectives:
ACHIEVABLE:	For this project Software like MATLAB Simulink is required. We have to learn Simulink software for successful completion of project. This will help in achieving the goals mentioned above.
RELEVANT:	This prototype will help to detect the edges of an image using chain code detection technique

Introduction :

In image processing, the accurate detection and representation of object boundaries play a crucial role in various applications such as object recognition, medical imaging, and computer vision. Chain code detection is a technique used to represent object boundaries by encoding the direction of traversal along the contour of the object. This representation enables efficient storage and analysis of object shapes, facilitating tasks such as shape matching and recognition.

Description:

Chain code detection is a technique used in image processing to extract contours or boundaries of objects within digital images. Instead of storing the coordinates of every pixel along the boundary, chain code represents the contour by encoding the transitions between neighboring pixels into a sequence of directional codes. This concise representation is efficient in terms of storage and computation, making it valuable for applications such as object recognition, shape analysis, and boundary reconstruction. Despite its simplicity, chain code detection is versatile and finds

applications across various fields including medical imaging, industrial automation, and geographical analysis. Creating a simulation for chain code detection in Simulink involves several steps. Chain code detection is a technique used in image processing to represent boundaries or contours of objects within an image. Simulink provides a platform for modeling and simulating dynamic systems, including image processing algorithms.
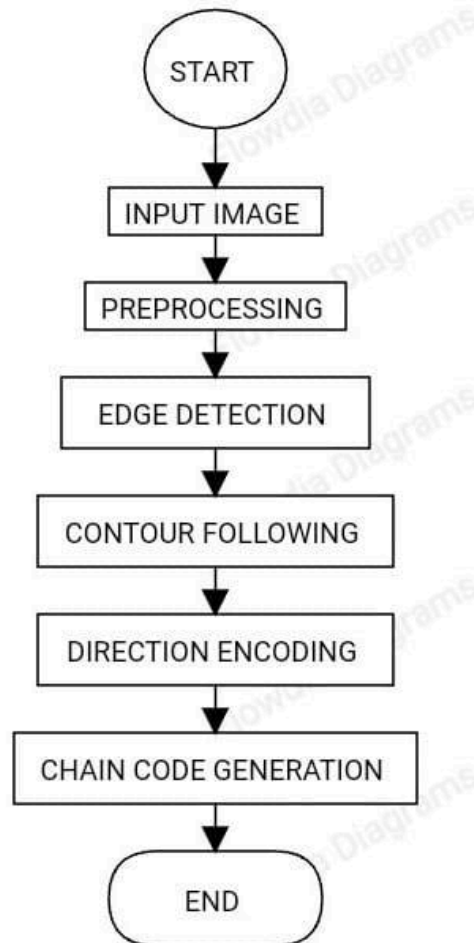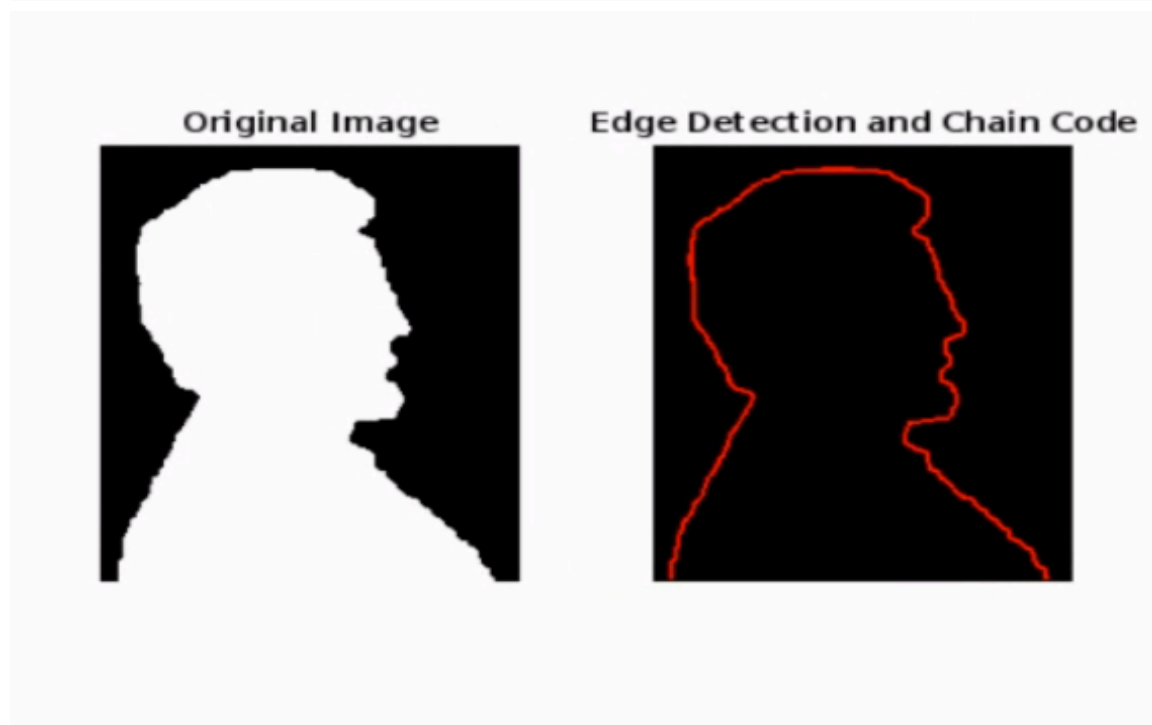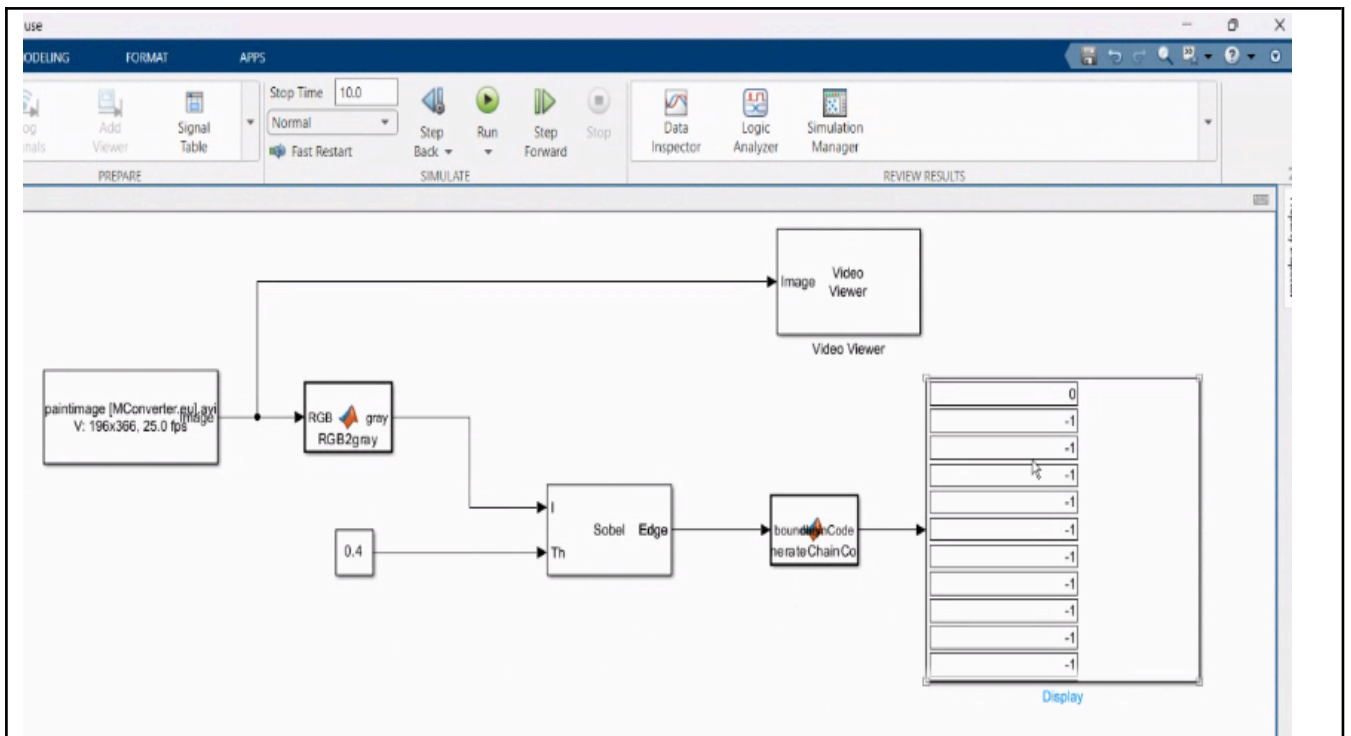
Block Diagram :-

Fig 1.1 Proposed block diagram of chain code detection:

Mentor Name & Signature with date