

SRM Institute of Science and Technology

Delhi – Meerut Road, Sikri Kalan, Ghaziabad, Uttar Pradesh – 201204

Department of Computer Applications

Circular – 2023-24

B.Sc. CS 1ST Sem

PROGRAMMING FOR PROBLEM SOLVING (USA23101J)

List of Programs

Lab 1: Algorithm, Flow Chart, Pseudo code

Lab 2: Input and Output Statements

Lab 3: Data Types

Lab 4: Operators and Expressions

Lab 5: Control Statements

Lab 6: Arrays – One Dimensional

Lab 7: Arrays : Multi dimensional

Lab 8: Strings, structures and union

Lab 9: Functions

Lab 10: Functions

Lab 11: Pointers Lab

Lab 12: Pointers

Lab 13: File: reading and writing

Lab 14: File Handling fputw(),fgetw(),

Lab 15: Creating Macros

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Department of Computer Applications

Circular – 2023-24

B.Sc. CS 1ST Sem

DIGITAL LOGIC FUNDAMENTALS (USA23102J)

List of Programs

- Lab1 : Verification of Basic Gates and Derived Gates
- Lab2:NAND as Universal Gate NOR as Universal Gate
- Lab 3:Laws of Boolean Expressions
- Lab 4: Verifications of Distributive Law
- Lab 5-Simplifying Boolean Expressions using theorems
- Lab 6: Implementation of Binary Addition and Subtraction
- Lab 7: Half Adder and Full Adder
- Lab 8:Half Subtractor and Full Subtractor
- Lab 9: Implementation of multiplexer
- Lab 10: Implementation of DeMultiplexer
- Lab 11: Implementation of Shift Registers and Serial
- Lab 12: Four Bit Binary Shift Counters
- Lab 13: Ring Counters
- Lab 14: Implementation of DOWN Counter
- Lab 15: Implementation of DOWN Counter

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Department of Computer Applications

Circular – 2023-24

B.Sc. CS 3rd Sem

PROGRAMMING IN JAVA (USA23301J)

List of Programs

Laboratory 1: Basic Java Programs

Laboratory 2: Operators

Laboratory 3: Arrays, Control Statements

Laboratory 4: Classes and Objects

Laboratory 5: Overloading Methods and Constructors

Laboratory 6: String Class, Command Line Arguments

Laboratory 7: Inheritance, Method Overriding, Abstract classes and methods

Laboratory 8: Packages and Interfaces

Laboratory 9: Exception Handling

Laboratory 10: Multithreading

Laboratory 11: Legacy Classes and Interfaces

Laboratory 12: Utility Classes

Laboratory 13: Event Handling

Laboratory 14: AWT Controls

Laboratory 15: Layout Managers, Byte and Character Streams

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B.Sc. CS 3rd Sem

DATABASE MANAGEMENT SYSTEM (USA23302J)

List of Programs

Lab 1: Data Definition Language Commands on sample exercise

Lab 2: SQL Data Manipulation Language Commands

Lab 3: SQL Data Control Language Commands and Transaction control commands to the sample exercises

Lab4 Inbuilt functions in SQL on sample Exercise.

Lab:5 SQL Queries and Set operation SQL

Lab 6: Nested Queries on sample exercise * Construction of Relational Table from the ER Diagram

Lab 7 : Join Queries on sample exercise. Demonstration for all Join Commands with SQL queries

Lab8: Correlated Subqueries

Lab9: Decomposition using FD- dependency preservation

Lab 10: PL/SQL Conditional and Iterative Statements

Lab 11: PL/SQL Exceptional Handling

Lab 12: PL/SQL Trigger

Lab:13 Authenticating the user (Users Credential ability)

Lab 14: Implementation by Using Tools Frontend (VB 10.0) and Backend (Oracle12g)

Lab 15 Project: : i)Employee payroll processing system ii)Student Marksheet processing system
iii)Banking system

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Circular – 2023-24

B.Sc. CS 3rd Sem

Office Automation Tool (UCS23G01J)

List of Programs

Lab 1: Creating, Opening and Basic Formatting in a Word Document

Lab 2: Modifying Font, Text Alignment, Paragraph Indentation and Bullets and Numbering in a Word Document

Lab 3: Creating an advertisement pamphlet

Lab 4: Inserting Header and Footer to the document & Creating Page Breaks

Lab 5: Create an Employee Salary Slip Table using Table Setting and Border Options

Lab 6: Create your class time table

Lab 7 : Prepare a Payslip for an Employee with Basic Formulas

Lab 8 : Chart Types

Lab 9: Number conversion in excel

Lab 10 : Working with Functions & Pivot Table, Pivot Charts

Lab 11 :Data Validation & Consolidate

Lab 12: Sorting table in excel

Lab 13 :Create a database with MsAccess

Lab 14 :Create a table with sample design and report generation

Lab 15: export data from ms access to excel

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B.Sc. CS 3rd Sem

ADVANCED EXCEL FOR DATA ANALYTICS (UCS23S03L)

List of Programs

Laboratory1:Workingwith formulasandfunctions
Laboratory2:IFfunction NestedIF,IFwithANDORNOT
Laboratory3:LookUp FunctionsV-Lookup
Laboratory4:DataValidation Methods of data validation
Laboratory5:Protectinga worksheet by Password
Laboratory6:Sortingadatabase
Laboratory7:Filtering a database AutoFilter
Laboratory8:Subtotals: DisplaySubtotalatasingle level
Laboratory 9:Pivot table: Format aPivottableReport
Laboratory10:Createagraph using Pivot data
Laboratory11:Conditional formattingUsingCells
Laboratory12:WhatifAnalysistools:
Laboratory13: Links betweenifferentWorksheets
Laboratory14:Creating Hyperlinks
Laboratory15:Workingwith charts: Creatingchartsusingcharttools
Laboratory16:Merging Workgroups
Laboratory17:Tracking changes
Laboratory18:Formatting charts
Laboratory 19:ChartsforMy data
Laboratory20:ChartTemplates
Laboratory21::Addingtitlesand values in charts
Laboratory22::Sparklines
Laboratory 23:Customize Sparklines
Laboratory24:Changethestyle of Spark lines
Laboratory25:CreatingaMacro S-6 SLO-1
Laboratory26:Recordinga macro
Laboratory27:Running a macro using menucommand
Laboratory28:Writinga macro
Laboratory 29: Assigninga macrotoabutton
Laboratory30:Functions Descriptio

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B.Sc. CS 5th Sem

INTERNET PROGRAMMING (UCS23501J)

List of Programs

Laboratory1: Learning to work with linux server

Laboratory2: Working with files and directory command

Laboratory 3: Working with file commands, Creating and modifying files using Vi Editor

Laboratory 4: Writing Simple PHP Programs

Laboratory 5: Operators and control flow statements

Laboratory 6: Embedding PHP script in HTML

Laboratory 7: various types of parameters and types of functions in PHP

Laboratory 8: Working with strings and arrays in PHP

Laboratory 9 : file and directory operations in PHP

Laboratory – 10 : Exception handling and classes in PHP

Laboratory 11 : Working with database and tables

Laboratory 12 : Working with queries, joins and sub queries in MYSQL

Laboratory 13 Manipulation of cookies and sessions using PHP

Laboratory 14 : Form validation , Connecting with MYSQL data using PHP functions

Laboratory 15 : creating PHP web applications to manipulating data [CRUD operations] from MYSQL table.

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B.Sc. CS 5th Sem

DESIGN AND ANALYSIS OF ALGORITHMS (UCS23502J)

List of Programs

Lab 1 - Time complexity for Merge Sort

Lab 2 - Time complexity for Quick Sort

Lab 3- -Executing Divide and conquer problem

Lab 4:- Executing the Greedy algorithm for tree vertex splitting problem

Lab 5:- Executing the Tree vertex splitting algorithm with Greedy method

Lab 6- Executing the Greedy algorithm for Optimal storage on Tapes problem

Lab 7;- Executing Multistage Graph shortest path problem using dynamic programming algorithm

Lab 8;- Executing All pairs shortest path problem using dynamic programming algorithm

Lab 9;- Executing Dynamic programming algorithm for Single source shortest path problem

Lab 10:- - Executing Dynamic programming algorithm for constructing Bi – connected Graphs problem

Lab 11: Executing Bi-Connected Components Graphs with backtracking

Lab 12- Executing 8 Queens problem with back tracking

Lab 13;- Executing the Graph coloring with backtracking

Lab 14: Executing Branch and bound Algorithm for solving Hamilton Problem

Lab 15- – Executing the TSP with Branch and Bound method

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Circular – 2023-24

B.Sc. CS 5th Sem

ARTIFICIAL INTELLIGENCE (UCS23D01J)

List of Programs

Lab 1: Program for solving a water jug problem.

Lab 2: Program for solving a water jug problem using Depth first search

Lab 3: Program for solving a water jug problem using Breadth first search

Lab 4: program to find out route distance between two cities

Lab 5: program for Tic Tac Toe game played by Single player against automated Computer player

Lab 6: Program for Tic Tac Toe game played by two different human players.

Lab 7: Program to implement Tower of Hanoi

Lab 8: Program for building a magic square of Odd number of Rows and columns.

Lab 9: Program for building a magic square of Even number of Rows and columns

Lab 10: Program to implement five House logic puzzle problem

Lab 11: Program for solving A* shortest path algorithm.

Lab 12: Program which demonstrates Best First Search.

Lab 13: Program which demonstrate the precedence properties of operators in C language.

Lab 14: Program to calculate factorial of a number using recursion.

Lab 15: program to implement five House logic puzzle problem

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B.Sc. CS 5th Sem

CLOUD COMPUTING (UCS23D02J)

List of Programs

Lab 1: Create a virtual machine

Lab 2: Installation of Platforms

Lab 3: Deploying existing Apps

Lab 4: Create a drop box using Google AP

Lab 5: Transfer Data using Google APPs

Lab 6: upload and download using Google APPs

Lab 7: Encryption and Decryption of Text

Lab 8: Simple Experiments in Cloud Sim

Lab 9: Simple Experiments in CloudSim

Lab 10: Develop a Hello World application using Google App Engine

Lab 11: Develop a Guestbook Application using Google App Engine

Lab 12: Develop a Windows Azure Hello World application

Lab 13: Create a Warehouse Application in Sales force.Com

Lab 14: Create a Warehouse Application in Sales force.Com using Apex prog Lang

Lab 15: Implementation of SOAP Web Services

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B.Sc. CS 5th Sem

INTRODUCTION TO DATA SCIENCE (UCS23G03J)

List of Programs

Lab 1: Perform Analysis on Simple Dataset I for Data Science

Lab 2: Create and upload dataset for data analytics

Lab 3: Install Python IDE and perform basic python programs

Lab 4: Apply Python built-in data types: Strings, List, Tuples, Dictionary, Set and their methods to solve any given problem

Lab 5: Solve problems using decision and looping statements

Lab 6: Apply all basic python OOP Concepts

Lab 7: Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining and Splitting

Lab 8: Perform array operations

Lab 9: Implement Random Walks

Lab 10: Perform operations on Data Frames using Python

Lab 11: Perform operations on Data Frames using Python

Lab 12: : Install, Import Pandas Learn and Explore a Sample Dataset with it

Lab 13: Perform data transformations using python

Lab 14: Install, Import Matplotlib. Explore all the Data Visualization Graphs

Lab 15: Install, Import Scikit Learn and Explore Iris Dataset with Pandas for ML Modelling

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B.Sc. CS 5th Sem

DATA VISUALIZATION TOOL (UCS23S05J)

List of Programs

Lab 1: Shelves & Cards

Lab 2: Color, Size, Shapes and Label Options Choosing color options

Lab 3: Formatting Options

Lab 4: Joining multiple tables from the same database

Lab 5: Hiding, Renaming and Combining fields

Lab 6: Extracting data, Data Blending

Lab 7: Pie chart, text table/ crosstab

Lab 8: Word cloud

Lab 9: Worksheet Actions – Filter Actions

Lab 10: Background Maps and Layers: Map options

Lab 11: Calculating fields, Table Calculations and Statistics Creating Calculate fields

Lab 12: Reference Lines, Bands & Distributions

Lab 13: Advanced Dashboard elements – Layout Container, Blank

Lab 14: Distributing and Sharing your Visualization – Exporting worksheets and Dashboards – Printing to PDF format

Lab 15: Using Tableau Reader

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B.Sc. CS 2nd Sem

OBJECT ORIENTED PROGRAMMING (USA23201J)

List of Programs

- Lab 1: I/O operations and operators
- Lab 2: Control structures and Functions
- Lab 3: Classes and Objects
- Lab 4: Parameterized Constructor and Constructor Overloading
- Lab 5 : Function Overloading
- Lab 6 : Operator Overloading
- Lab 7: Inheritance
- Lab 8 : Multiple ,Multilevel Inheritance
- Lab 9 : Abstract classes and Virtual Functions
- Lab 10 : Simple file programs
- Lab 11 : Working with files
- Lab 12: command line arguments program
- Lab13 :Templates
- Lab 14 :Multilevel exceptional programs
- Lab 15:User defined Exceptions and simple CPP application.

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B.Sc. CS 2nd Sem

Fundamentals of Data Structures and Algorithms (USA23202J)

List of Programs

Lab1: Recursion

Lab2: Arrays

Lab3: Implementation of LinkedList

Lab4: Implementation of stack and its applications

Lab 5: Queue implementation using array and pointers

Lab6: Implementation of binary tree using Arrays

Lab7: Implement all the three type of Tree Traversals

Lab8: Implementation of BST Heap Data Structure

Lab9: Implementation of Min and Max Heap

Lab10: Implementation of Bubble and Insertion sort

Lab11: Implementation of Quick sort and merge sort

Lab12: Linear search and Binary search

Lab13: Implementation of Graph using Array

Lab14: Implementation of shortest path algorithm

Lab15: Implementation of minimum spanning tree

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B.Sc. CS 4th Sem

ENTERPRISE JAVA PROGRAMMING (UCS23401J)

List of Programs

Laboratory 1: Create distributed applications using RMI

Laboratory 2: Create applications which can demonstrate the use of JDBC for Database Connectivity.

Laboratory 3: Create student applications using JDBC Database Connectivity

Laboratory 4: Develop Web Applications Using Servlet

Laboratory 5: Develop Web Applications Using ServletRequest, ServletResponse

Laboratory 6: Program that demonstrates the use of session management in Servlet

Laboratory 7: Web Applications using JSP

Laboratory 8: Include Directive JSP: include Action

Laboratory 9: Create a JSP based Web application which allows the user to edit his/her database Information

Laboratory 10: An EJB application that demonstrates Session Bean- Stateless Bean

Laboratory 11: An EJB application that demonstrates Session Bean –Stateful Bean

Laboratory 12: An EJB application that demonstrates Entity Bean.

Laboratory 13: MVC Architecture (i) Implementing MVC with Request Dispatcher (ii) Data Sharing Approaches

Laboratory 14: Build a web application that collects the user's name and displays "Hello World" followed by the user name.

Laboratory 15: creating our view which will be required to browse and upload a selected file.

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B.Sc. CS 4th Sem

OPERATING SYSTEMS (USA23402J)

List of Programs

Lab 1: Comparison between various Operating Systems

Lab 2: Booting process in GNU/Linux OS

Lab 3: Multi- thread Programming

Lab 4: Simulation of FCFS CPU scheduling algorithm Usage

Lab 5: Priority CPU scheduling algorithm

Lab 6: Simulation of Round Robin CPU scheduling algorithm

Lab 7: Write a procedure for timer interrupt handler

Lab 8: classical inter process communication problem (Producer consumer)

Lab 9: Write a procedure to make message passing in inter process communication

Lab 10: Program to implement Bankers Algorithm

Lab 11: Program to implement memory allocation with pages

Lab 12: Simulation of FIFO page replacement algorithm

Lab 13: multiple partition (dynamic Memory allocation method)

Lab 14 : Simulation of FIFO page replacement algorithm Paging

Lab 15: Simulation of optimal page replacement algorithm

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B.Sc. CS 4th Sem

HTML PROGRAMMING (UCS23G02J)

List of Programs

Laboratory 1: Acquaintance with elements, Tags and basic structure of HTML files

Laboratory 2: Designing of webpage Using basic and advanced text formatting.

Laboratory 3: Designing of webpage - working with Hyperlink.

Laboratory 4: Designing of webpage-Working with List.

Laboratory 5: Designing of webpage-Working with Tables.

Laboratory 6: Designing of webpage- working with Forms and Controls

Laboratory 7: Designing of webpage- working with Frames

Laboratory 8: Designing with cascading style sheet-Internal style sheet

Laboratory 9: Designing with cascading style sheet-External style sheet

Laboratory 10: Acquaintance with creating style sheet, CSS properties and styling.

Laboratory 11: Program to use ID Attribute in CSS document

Laboratory 12: Program to illustrate the Box Model by implementing the various properties.

Laboratory 13: Program to create a Simple List Box using HTML and CSS

Laboratory 14: Write an XML to accept student details [Name, ID, Branch and CGPA]. Write an XSL to display the list of students in descending order of their CGPA.

Laboratory 15: Create a college website using HTML and CSS

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B.Sc. CS 4th Sem

CONTENTMANAGEMENTSOFTWARE (UCS23S04J)

List of Programs

Laboratory1: System Requirements for Joomla

Laboratory 2: Using Toolbar options, Creating Store Database

Laboratory3: Create a Template

Laboratory4: Creating Menus for website

Laboratory5: Content Menu in Joomla

Laboratory6: Component menu in Joomla

Lab7: Working with modules, Implementation of Templates

Laboratory8: Working with plugin Manager

Laboratory9: Modules in Joomla

Laboratory 10: Joomla Global Settings, Media settings

Laboratory 11: Configure Joomla site with personal settings

Laboratory12: Joomla Language Manager

Laboratory13: Template Manager

Laboratory14: Adding forums, web Links

Laboratory 15: Creation of Websites and Personal homepages

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B.Sc. CS 6th Sem

PYTHON PROGRAMMING (UCS23601J)

List of Programs

Laboratory 1: Write a Python code to display system information using pywhois

Laboratory 2: The Magic 8 Ball is a toy used for fortune-telling or seeking advice.

Laboratory 3: Check whether a number is prime or not, Python Program to Generate a Random Number

Laboratory 4: Make a simple calculator

Laboratory 5: Find the Factorial of a Number Python Program to Convert Decimal to Binary, Octal and Hexadecimal

Laboratory 6: Program to read and write text and numbers

Laboratory 7: Program to Transpose a Matrix Program to List Methods for Inserting Elements

Laboratory 8: Using a List to Find the Median of a Set of Numbers Program using sorting and searching

Laboratory 9: When the user enters a statement, the program responds in one of two ways: 1 With a randomly chosen hedge, such as "Please tell me more." 2 By changing some key words in the user's input string and appending this string to a randomly chosen qualifier. Thus, to "My teacher always plays favorites," the program might reply, "Why do you say that your teacher always plays favorites?"

Laboratory 10: Program using recursive function

Laboratory 11: Write the code for a mapping that generates a list of the absolute values of the numbers in a list named numbers.

Laboratory 12: Write the code for a filtering that generates a list of the positive numbers in a list named numbers. You should use a lambda to create the auxiliary function

Laboratory 13: Program using classes and methods

Laboratory 14: Python Program for Operator overloading

Laboratory 15: Program using polymorphism, abstract classes

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Circular – 2023-24

B.Sc. CS 6th Sem

COMPUTER NETWORKS (USA23602J)

List of Programs

Laboratory 1: Basic Network Commands and their functionalities

Laboratory 2: Introduction to CISCO Packet Tracer (CPT)

Laboratory 3: Build a Peer to Peer N/W using Hub and Switch. Analyse the difference between the working of a Hub and a Switch

Laboratory 4: Construct N/W using bus topology, Star topology

Laboratory 5: Construct N/W using Ring topology, Mesh topology

Laboratory 6: Connecting two lans using router with static Route

Laboratory 7: Multi-routing connection with static router

Laboratory 8: Connecting 2 Lans Using Dynamic Routing

Laboratory 9: Implementing a simple application using TCP

Laboratory 10: Implementing a simple application using UCP

Laboratory 11: Analysing the Working of RIP

Laboratory 12 :ARP simulation in CPT

Laboratory 13: Analyse the Working of a DNS

Laboratory 14:Implementing a simple web server

Laboratory 15: Emulate Working of a complete N/W using CPT

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B.Sc. CS 6th Sem

SERVICE ORIENTED ARCHITECTURE (UCS23D03J)

List of Programs

Lab 1: Create DTD file for student information and create a valid well-formed XML document to store student information against this DTD file

Lab 2: Create XMS schema for student information and create a valid well-formed XML document to store student information against this XMS schema file.

Lab 3: Using XSL display student information in tabular format.

Lab 4: Create web calculator service in NET Beans and consume it.

Lab 5: Create web calculator service in .NET and create client to consume this service

Lab 6: Create java client to consume web service created in .NET

Lab 7: Create .NET client to consume web service created in JAVA

Lab 8: Create java client to consume existing web service hosted in the internet

Lab 9: Create a RESTFUL web-services in Net beans

Lab 10: Using JAXP SAX echo given xml file on console.

Lab 11: Using JAXP DOM echo given xml file on console

Lab 12: Using AXIS 2 framework and TOMCAT create a simple calculator web service

Lab 13: Using AXIS 2 framework and TOMCAT create a java client to consume calculator web service.

Lab 14: To create a web services in .NET

Lab 15: INVOKING EJB COMPONENTS AS WEB SERVICES

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B.Sc. CS 6th Sem

MACHINE LEARNING (UCS23D04J)

List of Programs

- Lab 1: Extract the data from database using python
- Lab 2: Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis
- Lab 3: Implement the naïve Bayesian classifier
- Lab 4: Construct a Bayesian network considering medical data
- Lab 5: Implement the parametric classification
- Lab 6: Implement multivariate regression
- Lab 7: Implement PCA Using Optdigits from the UCI repository
- Lab 8: Draw two-class, two-dimensional data such that (a) PCA and LDA find the same direction
- Lab 9: Draw two-class, two-dimensional data such that (a) PCA and LDA find totally different directions
- Lab 10: Implement k-means clustering
- Lab 11: Implement Hierarchical Clustering
- Lab 12: Generalize kernel smoother to multivariate data
- Lab 13: Implement a tree induction algorithm with backtracking.
- Lab 14: Implement a rule induction algorithm for regression
- Lab 15: Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets

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COMPUTER VISION FUNDAMENTALS (UCS23G04J)

List of Programs

Lab 1-Install OpenCV Displaying images OpenCV

Lab2: Reading & Writing images OpenCV

Lab 3-Draw a Rectangle Draw a Circle

Lab 4: Text in Images

Lab 5- Color Space OpenCV Thresholding OpenCV

Lab 6: Finding Contours

Lab 7: Image Edge Detection OpenCV

Lab 8: Image Scaling & Rotation using OpenCV

Lab 9: Image Translation OpenCV Image Filtering OpenCV

Lab 10: Image Filtering Blurring OpenCV Image Filtering Blurring Gaussian Blur OpenCV

Lab 11: Image Filtering Blurring Median Blur OpenCV Morphological Operations Erosion OpenCV

Lab 12: Morphological Operations Dilation OpenCV

Lab 13: Image Filtering bilateral OpenCV

Lab 14: Morphological Operations Opening OpenCV

Lab 15: Morphological Operations Closing OpenCV