RESUME

Details

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blog : http://pi-virtualworld.blogspot.com
Code Repository : https://github.com/pi19404/m19404
Document Repository: http://www.scribd.com/pi19404

Education

- 2002-10th standard from St Stainslaus high school - 72% aggregate
- 2004-12th standard from SIES collage of science – 84% agggregate
- 2006-BE undergraduate degree from Atria institute of technology 61% aggregate score
- 2011-2014 - Master Degree at IITB

Current Education :

Pursuing Master Degree (2011-2014) MTECH RA in Electronics and communication IITB (Indian institute of technology Bombay,India) and work in Vision and image processing Lab as Research Assistant

Research Interests :

I am research assistant in vision and image processing lab at IITB.My primary research area include hand gesture recognition application for mobile application and vision based application for mobile application.

The work done during my research has enabled to learn good programming skills in developing C/C++/java application using OpenCV libraries on desktop and android OS,basic OpenCL programming for image processing etc

Competition:

AUVSI Foundation and ONR's 16th International RoboSub Competition which involves vision based guidance of autonomous robot in underwater environment. I am a part of team representing my university in the competition and work on image processing part of project which involves preprocessing underwater image,object detection and recognition in underwater environment.As part of the project few of algorithms developed as automatic contrast enhancement for underwater images like contrast stretching,CLAHE,Local contrast stretching for color image.Adaptive contrast enhancement in different underwater enviroements by performing water color estimation.White balence algorithms for removal of underwater color cast ,fusion based techniques for underwater image enhancement etc.

Work Experience

Before joining my master programming at IITB .I have worked for 5 years (2006-2001) in Polaris Software Ltd as Application Developer for Infrastructure Components for Trade Banking System.

I worked mainly in C,C++ and Java on UNIX operating system to design infrastructure application components for trade banking system which involved designing core technical components which provide support to the application. Some example include to

- facilitate inter process communication using multi threaded /multi process sockets programming,
- designing and developing document storage component to interface with CENTERA image storage/retrival document system (20K document requests per hour)
- inter processing communication in Distributed computing environment
- inter process communication using Message Queues
- inter process communication to synchronize document transfer and processing.
- XML/XSLT based document processing system for on-line document processing system.
- Oracle Database SQL optimization e
- application to migrate large data from BDB to oracle database and corresponding image from different image storage systems .

These project's have enabled my to possess extremely good programming skills in C/C++ and java

Professional courses :

EMBEDDED SYSTEMS AND RTOS Course from TRI technology (8 months)

Programming Languages

C,C++,java,Matlab,octave,python,android programming,etc,OpenCL,SQL,Oracle Database,BDB database,Developing application in C,C++,java using OpenCV libraries on desktop and android OS.

Sample Codes

Below are links to my blog site and some sample code of work which I have encountered during my research .The code samples can be found at github respository https://github.com/pi19404/m19404/ and documents at blog site http://pi-virtualworld.blogspot.com or scribd repository http://www.scribd.com/pi19404

1>Spatial Feature Detection : Good Feature To Track,Harris Corner,Fast Corner,

I have implemented the algorithms from scratch referring OpenCV code to get a better idea of algorithms and implementation details
of the same.

Document : http://pi-virtualworld.blogspot.com/2013/02/feature-detection-overview-of-harris.html
http://pi-virtualworld.blogspot.com/2013/02/overview-of-good-features-to-track.html

Code : https://github.com/pi19404/m19404/tree/master/FEATURE_DETECTOR

2>Spatio-Temporal Corner Detection

The Harris3D and Fast3D spatio temporal corner detection were implemented to identify robust spatio-temporal corners

Link : http://pi-virtualworld.blogspot.com/2013/03/fast-3d-extension-of-fast-feature.html
: http://pi-virtualworld.blogspot.com/2013/02/spatio-temporal-feature-extraction.html
Code : https://github.com/pi19404/m19404/tree/master/FEATURE_DETECTOR

3>Laplacian of Gaussian Temporal Filter for motion segmentation

A temporal filter to segment motion in image frames was implemented.It applies temporal laplacian of Gaussian filter to identify pixels which encountered motion

Document :http://pi-virtualworld.blogspot.com/2013/02/temporal-filters-for-motion-segmentation.html
Code :https://github.com/pi19404/m19404/tree/master/TemporalFilter

4>Shape Classification using Histogram of oriented Gradients and Implemented on android platform

A version of Histogram of oriented gradients was implemented and shape classification was performed using HOG as feature using SVM as classifier using libsvm libraries.

The same was implemented on android platform.The shape is made by the user using touch pad and the application classifies the shape based on HOG features

Document :http://pi-virtualworld.blogspot.com/2013/02/shape-classfication-using-histogram-of.html
Code :https://github.com/pi19404/m19404/tree/master/HOG
Android Code :https://github.com/pi19404/m19404/tree/master/Android/AndroidOpenCV

5>Implementation of CLAHE

A implementation of CLAHE for local contrast enhancement with application to underwater image processing

Document :http://pi-virtualworld.blogspot.com/2013/02/control-limited-adaptive-histogram.html

Code :https://github.com/pi19404/m19404/tree/master/CLAHE

6>OpenCL,OpenCV programming : BGR2GRAY,BGR2HSV color conversion,1D convolution,2D convolution,2D separable convolution,Box filter,Gaussian filter

The programs were implemented to understand the basics of OpenCL programming and to find a way to interface OpenCL-OpenCV

Document :http://pi-virtualworld.blogspot.com/2013/02/opencl-heterogeneous-parallel-program.html
:http://pi-virtualworld.blogspot.com/2013/02/opencl-2d-convolution-using-separable.html
:http://pi-virtualworld.blogspot.com/2013/02/hetrogenous-parallel-programming-for.html
:http://pi-virtualworld.blogspot.com/2013/01/opencl-heterogeneous-parallel.html

Code :https://github.com/pi19404/m19404/tree/master/OpenCL-Image-Processing

7>Unistroke gesture recognizer using $1 gesture recognizer and Fast DTW algorithm on android platform

Sample applications to implement simple gesture recognition application on android platform using template based matching

Document :http://pi-virtualworld.blogspot.com/2013/04/android-uni-stroke-touch-gesture.html
:http://pi-virtualworld.blogspot.com/2013/04/android-touch-gesture-recognition-based.html

Code :https://github.com/pi19404/m19404/tree/master/Android/AndroidDollarGesture
:https://github.com/pi19404/m19404/tree/master/Android/AndroidGesture1.2

8>Simple face tracking application on android platform

A simple face tracking application using haar cascades and cam shift tracked on android platform using OpenCV libraries

Document :http://pi-virtualworld.blogspot.com/2013/04/android-opencv-simple-face-tracker.html
:http://pi-virtualworld.blogspot.com/2013/04/android-opencv-face-detection.html

Code :https://github.com/pi19404/m19404/tree/master/Android/AndroidOpenCV1.1
:https://github.com/pi19404/m19404/tree/master/Android/AndroidOpenCV1.2

9>Underwater Image Processing

Below are few topic encountered which performing researching for underwater image enhancement for ROBOSUB competition.
and are specifically modified to under water image environments.
Modified Contrast Stretching,White Balance Algorithms :Gray World,Shade of Gray,max-rgb,max-edge etc,CLAHE
Seeded Regions growing Line Scan algorithm ,Fusion based techniques for underwater image enhancement

Document
:http://pi-virtualworld.blogspot.com/2013/02/automatic-white-balance-algorithms.html
:http://pi-virtualworld.blogspot.com/2013/02/description-and-results-of-different.html
:http://pi-virtualworld.blogspot.com/2013/02/image-enhancement-using-fusion.html
:http://pi-virtualworld.blogspot.com/2013/02/control-limited-adaptive-histogram.html
:http://pi-virtualworld.blogspot.com/2013/03/seeded-region-growing-using-line-scan.html

Code :https://github.com/pi19404/m19404/tree/master/ColorConstancy
:https://github.com/pi19404/m19404/tree/master/ContrastStretching
:https://github.com/pi19404/m19404/tree/master/FusionEnhancement
:https://github.com/pi19404/m19404/tree/master/CLAHE
:https://github.com/pi19404/m19404/tree/master/RegionGrowing