Anush Mohan

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Summary

Software Engineer with over 3 years of industry experience in computer vision, a strong research background and technical expertise in signal and image processing. Currently working as a Senior Software Engineer on the Core Vision team at Cognex Corporation, where I am responsible for writing machine vision software libraries in C and C++ that are used in automated manufacturing to inspect and identify parts, detect defects, and guide assembly robots.

Skills

- C++, C, Python, Java, C#, Matlab
- OpenCV, Cognex Vision Libraries
- ClearCase, git
- Windows and Linux environments
- Experience with TI C64x DSPs
- Experience with Android development

Experience

Senior Software Engineer, Core Vision

Feb 2014 - Present

Cognex Corporation **Natick, MA**

Responsible for developing efficient and robust machine vision software libraries in C and C++ to run on PC and embedded platforms.

2D Part Alignment Developed suite of tools in C++ to align 2D shapes to automate cell-phone assembly.

- Created tool to calibrate multiple cameras and a moving stage to within 0.005mm accuracy. Automatically detect and rectify skew and scale errors in the stage setup.
- Created robust line finding tool that finds and ranks multiple lines across multiple fields of view. Achieved speeds comparable with existing single image single line finding tools.
- Created tool to estimate the best fit 2D rigid pose that centers one polygon inside another, to within 0.01mm accuracy.

Software Engineer, Core Vision

Jun 2011 - Feb 2014

Cognex Corporation **Natick, MA**

3D Measurement Tools Developed suite of tools in C to perform 3D measurements on depth-images.

- Responsible for identifying the vision tools required to solve target applications. Collected datasets and built application prototypes in C#. Determined function specifications and made recommendations on which tools to build.
- Created tools for estimating planes, and measuring heights and volumes in a depth-image.

Edge Inspection Created C++ wrapper of edge inspection tool written in C.

- Added multi-threaded support and functionality to detect gap defects.
- Added support to detect edges in affine warped images.

Database Collection Tool Created a GUI application in C# to automate image database collection for testing purposes.

Supervised an intern and helped him port a barcode reader to run on Android.

Research Assistant
May 2010 - May 2011

Computer Vision Lab, University of Michigan
Ann Arbor, MI

Research advisor, Silvio Savarese

Responsible for conducting research on 2D and 3D object detection algorithms.

Object detection in short video sequences Developed a novel algorithm to improve Hough voting based object detection rates by transferring Hough votes across multiple frames.

- Improved performance over single-frame Hough voting based object detection by as much as 15%.
- Implemented as a client-server framework for Android. The server was written in OpenCV.

Object detection and semantic modeling of LIDAR data Developed a framework to identify 3D objects in point cloud data from LIDAR scans of large environments, and replace found objects with 3D CAD models. Implemented in MATLAB.

Publications

Visual localization in fused image and laser range data
ICRA, 2011

Nicholas Carlevaris-Bianco, Anush Mohan, James R. McBride and Ryan M. Eustice,

Developed a method for tracking a camera system using a Kalman Filter, within an a-priori known map constructed from co-registered LIDAR and image data. Implemented in Matlab and C++.

Initial results in underwater single image dehazing.
OCEANS, 2010

Nicholas Carlevaris-Bianco, Anush Mohan and Ryan M. Eustice,

Developed a novel method for removing haze from underwater images, using a single image and no specialized hardware or prior knowledge of the scene. Implemented in Matlab.

Education

University of Michigan
Sept 2009 - May 2011

Masters of Science, Electrical Engineering
Ann Arbor, MI

Specialization in computer vision and image processing
GPA: 3.9/4

BMS College of Engineering
Sept 2005 - May 2009

Bachelors of Engineering, Electronics and Communications
Bangalore, India

Major in signal processing.
GPA: 3.75/4

Thesis on Image Stitching to Create Panoramas

Online

GitHub: www.github.com/anushmohan
LinkedIn: www.linkedin.com/in/anushmohan