

# Anush Mohan

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170 Gore Street, Cambridge MA 02141

734.274.0291

anush.mohan@gmail.com

## Summary

Software Engineer with over 3 years of industry experience building computer vision applications in C and C++. Have 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, a machine vision company that builds software and sensors 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 0.005 mm 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 of 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*

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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,

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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,

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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](https://www.github.com/anushmohan)

*LinkedIn:* [www.linkedin.com/in/anushmohan](https://www.linkedin.com/in/anushmohan)