

# Thomas Meiswinkel

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## Objective

To secure a challenging position that allows me to contribute my interpersonal, design engineering, mathematical, and software development skills in the field of autonomous robotics.

## Education

**M.S. Electrical Engineering**, Expected Graduation: December 2009      GPA: 3.75/4.0

Tentative Thesis Title: "Autonomous Robotic Control Using LIDAR"

The University of North Carolina at Charlotte, Charlotte, NC

**B.S. Computer Engineering, Minor: Mathematics**, December 2007      GPA: 3.476/4.0

Specialization: Signal Processing and Embedded Systems

The University of North Carolina at Charlotte, Charlotte, NC

## Computer Skills

**Embedded Processors:** ARM7TDMI, ARM9, Blackfin BF561, MSP430, Renesas M16/62C

**Platforms:** MS-DOS, FreeRTOS, Linux, uClinux, UNIX, Windows 2000/XP

**Programming:** Bash Script, BASIC, C, JAVA, VHDL

**Software:** Apache HTTP Server, Blackfin GNU Toolchain, IAR Embedded Workbench, Mathcad, MATLAB, ModelSim, MS Office Pro XP, MS Visual Basic, OpenOffice.org, Renesas HEW, Xilinx ISE

## Relevant Experience

**Teacher Assistant**, Charlotte, NC, August 2008 – Present

**Electrical and Computer Engineering Department**, The University of North Carolina at Charlotte

- Hold recitation sessions for class section of 40 students that supplements for Logic System Design I.
- Assist Professor Conrad with grading responsibilities and organize recitation sessions to review concepts and assignments for students.

**Research Assistant**, Charlotte, NC, May 2008 – Present

**Electrical and Computer Engineering Department**, The University of North Carolina at Charlotte

- Worked with Zapata Engineering to research and develop autonomous robotic vision system using Sick LMS 200 LIDAR for obstacle avoidance and mapping.
- Implemented object color tracking using solid color centroid algorithm and pulse-width modulation motor control for autonomous robot platform on CMUcam3.

**Intern**, Gastonia, NC, May 2007 – August 2007

**Accounting Department**, Stabilus USA

- Worked on a logistics team to develop and implement inventory reduction plan for unused parts.
- Analyzed inventory in SAP and developed MS Access database to keep track of quality audits.

## Projects and Coursework

**Senior Design Project**, Real Time Stereoscopic 3D Reconstruction on Low-Power FPGA Systems

- Customized Linux kernel and designed a PCB for interfacing to a Micron camera headboard.
- Developed software in uClinux on Blackfin BF561 DSP processor to capture video frames.
- Researched stereoscopic vision methods for calculating depth images for robotic navigation.
- Funded by NC Space Grant ESMD Design Award for research in the field of space exploration.

## Graduate Projects

- Low-cost webcam rangefinder implementation in MATLAB using Sobel operator and thresholding.
- Simulation of Wi-Fi network access points for maximum coverage area within an indoor environment.
- Preemptive scheduling implementation in FreeRTOS running on AVR Butterfly platform.
- Eigenface and principal component analysis methods for recognizing numeral images in MATLAB.
- Rendering polygonal surfaces of 3D points into 2D images using Phong reflection model in MATLAB.

## Relevant Courses

Advanced Embedded Systems, Analog and Digital Communication, Applied Digital Image Processing, Digital Signal Processing I, Digital Signal Processing II, Embedded Systems, Pattern Recognition, Recognition from 2D and 3D Images, Wireless Communication and Networking