

VIN RAJU

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EXPERIENCE:

7 Years Industry Experience

*June 2001-
Present*

Raytheon Electronic Systems

El Segundo, CA

Mechanical Engineer II: created mechanical designs for 2 proposals:

1) unconventional telescope and imager design to reduce optical system length: created the conceptual mechanical design from optical raytraces, & the mechanical write-up.

2) sensor for Unmanned Air Vehicle: completed the total packaging of 2 opto-mechanical sensor systems with multiple fields of view. Also composed the packaging write-up & mechanical portion of the financial bid. This proposal won.

Mechanical design & packaging for 6 Raytheon programs, designed 3 castings & flexible motherboard assemblies.

*Dec 1999-
May 2001*

Fox Digital, A News Corporation Company

Los Angeles, CA

Staff Engineer: Worked on a team to develop software to gather TV reception data collected from around the US and produce graphical reports. Conducted Interference analysis for Fox TV stations. Software tasks were completed using perl, C, Visual Basic, html, php, & MySQL.

*Feb 1998-
Nov 1999*

Gerber Technology Inc. (a subsidiary of Gerber Scientific Inc. NYSE:GRB)

Tolland, CT

Mechanical Engineer: Design & development work for automation equipment including 72" wide plotters & auto-labeling machines. 3D design of metal & plastic parts & assemblies using IDEAS CAD software, mechanism development, actuator & sensor selection, & electronic development.

Conducted Frequency Analysis & created a Simulink model of a 2-axis electro-mechanical plotter & altered its control software (C++) to reduce vibration.

Created a working "proof of principle" print-&-apply labeling device. Designed a mechanism to peel & hold a sticky label & then apply it to a surface. Wrote software on a PC to send commands to the label printer & the mechanical system. Designed & built an electronic board to interface between the PC's parallel port & the actuators of the system. The software on the PC told the label printer to print, & told the actuators to move in a timed-sequence to apply the label.

*Aug 1996-
Dec 1997*

NYS Center for Advanced Tech. in Automation, Robotics & Mfg. (at RPI)

Troy, NY

Resident Engineer: Conducted Research for DynaBil Industries, a Boeing supplier.

-Developed a method to hold contoured sheet-metal parts while being cut by a 5-axis Computer Numerically Controlled (CNC) abrasive water-jet (AWJ) cutter. The AWJ damaged holding fixtures during the cutting process, so the fixture could not be reused to put the part in the same location twice, therefore the position of the part would not match the CNC instructions. The position of the holding fixture was determined by measuring undamaged areas. Based on the measured position of the fixture, my software performed 3D Transformations to alter the AWJ instructions so the part could be cut in its measured location.

-Developed assembly techniques to assemble aircraft parts without the need of an elaborate fixture, but instead using precisely drilled holes to align and mate parts together.

*June 1994-
May 1996*

MIT, Dept. of Mechanical Engineering, Field & Space Robotics Lab.

Cambridge, MA

Undergraduate Research Assistant: Wrote software to read a time-based list of joint-angles for a walking robot, and generate an animation of the robot in motion.

Assisted research on the Control of a robotic arm mounted on a flexible structure that was subject to vibration caused by the motion of the arm. Stress in the structure was measured in real-time with strain gauges to predict the structure's displacement during arm motion. The position of the tip of the arm was corrected in the PID control loop using the predicted displacement.

*Oct 1993-
Feb 1994, &
Jan- May 1993*

MIT, Dept. of Mechanical Engineering

Cambridge, MA

Undergraduate Research Assistant: Provided technical support for a Master-Slave Tele-manipulator. The slave manipulator arm mimicked the motion of the master arm through a PID controller implemented with analog electronics. The PID gains were adjusted with potentiometer knobs. A 3-second delay between the master and slave was implemented using code written by a graduate student running on a Mac II computer. The delay simulates the effect of having the slave in a remote location like the Moon and the master on Earth. The electronic signals would take approximately 3 seconds to make the round trip.

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EXPERIENCE: (continued)

May- Aug 1993 **MIT, Lincoln Laboratory** Lexington, MA
Wrote C programs to process telemetry data received from 2 Lincoln Lab satellites and generate reports on their status. (summer full-time)

EDUCATION: **Rensselaer Polytechnic Institute** Troy, NY
Master of Science, Mechanical Engineering, December 1997, Thesis: "Fixturing and Assembly Methods for Aircraft Body Panels and Structural Supports." GPA: 3.8 / 4.0

Massachusetts Institute of Technology Cambridge, MA
Bachelor of Science, Mechanical Engineering, May 1996, Thesis: "Design of Experimental Test Beds for Modular Field Robots." Humanities concentration: Writing. GPA: 4.2 / 5.0

SKILLS: C/C++, Matlab & Simulink, perl, MS Visual Basic; Simple electronics; CAD/CAM: IDEAS (4.5 yr.), some exp. with AutoCAD, & Pro Engineer; Machine shop milling & turning, 3 & 5-axis CNC milling; WinXP/2000/98, UNIX, Linux, DOS; MS Word, Excel, & PowerPoint

PUBLICATIONS: Walczyk, D.F., Raju, V., & Miller, R., "A Simplified Method for Fixturing Aircraft Sheet Metal Parts During Post-forming Operations," MED-Vol. 8, *Proceedings of the ASME Manufacturing Science and Engineering Division-Long Beach*, CA 1998, pp. 917-924.

Walczyk, D.F., Raju, V., & Miller, R., "Fixture-less assembly of sheet metal parts for the aircraft industry," accepted for publication in the *Proceedings of the Institution of Mechanical Engineers: Journal of Engineering Manufacture*.

Mavroidis C., Dubowsky S., Raju V., "Endpoint Control of Long Reach Manipulator Systems," *Proceedings of the 9th World Congress of the Theory of Machines and Mechanisms*, Milan, Italy, August 1995, vol. 3, pp. 1780-1784.

SKILLS: C/C++, Matlab & Simulink, perl, MS Visual Basic; Simple electronics; CAD/CAM: IDEAS (4.5 yr.), MasterCam, & some exp. with AutoCAD, & Pro Engineer; Machine shop milling & turning, 3 & 5-axis CNC milling; WinXP/2000/98, UNIX, Linux, DOS; MS Word, Excel, & PowerPoint

ACTIVITIES: Served as both Vice President and Secretary of the Phi Delta Theta Fraternity at MIT, and was active in the fraternity's award winning community service program. Played MIT Varsity Lacrosse. Other interests include recreational volleyball, ice hockey, softball, & hobby electronics & computing.

US CITIZEN born and raised in New York.

CLEARANCE: SSBI, DOD