

VINOD NAGULAPALLI

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DeKalb, IL-60115

OBJECTIVE

To seek a full time position in design, analysis and development of mechanical devices which will supplement my academic skills with practical experience.

PROFILE

- Three years of experience in design and development of mechanical components and design of mechanisms and more than 4 years of experience in solid modeling using CAD tools like Pro/E with emphasis on modeling, detailing, layouts, assembly, GD&T.
- Finite Element Analysis of automotive and structural components using ANSYS.
- More than two years of research experience in Vibrations & Acoustics

EDUCATION

MS in Mechanical Engineering,	Northern Illinois University, Dekalb, IL	GPA 3.9/4.0	Aug' 05
B.Engg in Mechanical Engineering,	Osmania University, Hyderabad, India	GPA 3.9/4.0	Aug' 99

SKILLS

CAD/CAM: Pro/E-Solid Modeling, Pro/E-Wildfire, AutoCAD, Solid Works

Manufacturing Tools: CNC Programming using G code and M code, APT Part Programming

Analysis: ANSYS, Pro/Mechanica, Pro/Motion, Signal Calc, PULSE, STAR, MESCOPE, nCode

Others: MATLAB, Ms-Office, C, Windows 2000/NT/XP.

COURSES

Computer Aided Manufacturing	Strength of Materials	Computer Aided Designing and Manufacturing
Continuum Mechanics	Advanced Vibrations	Computer Aided Design of Mechanical Systems
Experimental Methods in Vibrations	Advanced Dynamics	Advanced Mechanical Engineering Analysis

EXPERIENCE

Engineer Trainee, Central Institute of Tool Design, Hyderabad, India Dec'98 - Apr'99

Obtained certification training in I-DEAS and was responsible for teaching students AutoCAD, Mechanical Desktop, and worked on project 'Design of Capacitor Holder' using I-DEAS software.

Contract Engineer, Advanced Systems Laboratories, Hyderabad, India Aug'99 - Oct'01

I worked in this capacity with the CAD/CAM facility of Advanced Systems Laboratories. Work responsibilities include design and development of aerospace mechanisms and generation of manufacturing drawings from the Pro-E part models, analysis of the components using.

Pro/E Designer, Mechanical Engineering, N.I.U, DeKalb, IL May'04 - Aug'04

40 real world mechanical components and 15 assemblies have been modeled in Pro/E as a part of CAD/CAM volunteer group at mechanical engineering department, NIU. The Objective was to learn and explore the possibilities in Pro/E and give suggestions for improvements in course work on the same.

Teaching Assistant, Mechanical Engineering, N.I.U, DeKalb, IL Aug'03 - May'05

Worked as a Teaching Assistant for undergraduate students, at the university. Responsibilities included teaching of Mechanical vibrations in recitation classes. Grading quizzes and exams, and Proctoring were other responsibilities.

Vibration Lab Assistant, Mechanical Engineering, N.I.U, Dekalb, IL Aug'03 - May'05

Conducted and demonstrated vibration experiments (free-free beam, cantilever beam, Cylindrical beam, T-shape beam, Impact testing and Shaker testing) using PULSE, Signal Cal, MESCOPE softwares to undergraduate students and also was responsible for assisting and guiding the students to finish their course project in mechanical vibrations.

Research Assistant, Mechanical Engineering, N.I.U, DeKalb, IL

May'05 - To date

Worked on the projects like 'Modal Analysis of Filter' and 'Accelerated Life Testing of Aluminum. Used ANSYS, nCode, Pro-E, PULSE and MESCOPE softwares to work on these projects.

MASTER'S THESIS

Aug'05

FATIGUE LIFE OF NOTCHED ALUMINUM BEAMS AT ELEVATED STRESS LEVELS

In this thesis, Fatigue life of beams subjected to various levels of vibration is studied experimentally and theoretically. Accelerated testing involves testing at levels higher than the normal usage level in order to reduce testing time and is of great interest to automotive and other types of industry where components are subject to vibration. Accelerated testing criteria are explored by correlating theoretical predictions with experimental results and the variation of fatigue life with the damping ratio was studied for different theories.

PROJECTS

Design of Pyrobolt Actuated Stage Separation System Pro-E:

The pyrobolt actuated stage separation mechanism is low shock stage separation mechanism. The key of this mechanism is 'Pyrobolt', which is designed in Pro-E. This project involves various component drawings, modeling and assembling of the stage separation mechanism for the rocket motors was performed in Pro-E and AutoCAD.

Modeling of Spin Recovery System in Pro-E:

The above project involved extensive parametric part modeling, assembly modeling, pipe routings of missile systems, consisting of about 400 components. This results in better-informed design decisions and to resolve all design issues before the first physical prototype, resulting in huge saving in time and resources. All production drawings are automatically generated from the solid model.

Modal Analysis of Muffler and Cylinder:

Designed 'Muffler' and 'Filter' in Pro-E and the theoretical and experimental modal analysis of Muffler and Filter were performed and the results were compared to know the behavior of the parts in real world scenario. ANSYS was used for the theoretical modal analysis calculation and the experimental results were obtained with the help of PULSE analyzer and MESCOPE software. Impact and shaker tests were performed to determine the accuracy of the mode shapes.

Modal Analysis of Aluminum Cylinder:

Modal analysis of an aluminum cylinder was performed to calculate the natural frequencies and mode shapes theoretically and verified them with the experimental values obtained by the Impact hammer test and Shaker tests with the free-free type of boundary conditions.

Three-Dimensional Modal Analysis of a Complex filter

Modeled 'Filter' in Pro-E and performed modal analysis of the filter with the help of the PULSE analyzer using Impact hammer test and Shaker test. The results were exported to ME scope for finding out the damping and to animate the 3D mode shapes.

Design and Analysis of Aircraft wing:

Aircraft wing is modeled in Pro/E and Static and Modal analysis is performed using Ansys. Experimental modal analysis of the prototype aircraft wing is performed by using Pulse analyzer and MESCOPE software. The stresses induced are studied, and the aircraft wing is redesigned by modifying its geometry in order to eliminate the stress concentration areas.

Truss Design Using Pro/E:

Modeled and assembled a triangular truss element in Pro/E. The assembly and individual truss component part files had all dimensions assigned to a single layout. A truss analysis of force distribution in individual elements was done manually and the corresponding equations were input as relations in the layout. The program then calculated the part dimensions after the user supplied the material properties and Factor of safety parameters. The calculated dimensions could then be updated automatically in all the part and assembly files.

Design of Function Generator:

A layout for the synthesis of a four-bar function generator based on freudenstein equations is developed in Pro/E such that the program calculates the required lengths of the coupler and follower for any given length of the crank, input and output angles.

Motion Analysis of a Slider- Crank Mechanism:

Slider-Crank mechanism is modeled in Pro/E and motion analysis is performed in Pro/Motion. Determined force and torque produced in the joints and analyzed using Pro/Mechanica.

Performed stress Analysis of Cylindrical tubes with internal and external pressures and various machine components like connecting rod, bracket, C-clamp using ANSYS.

CERTIFICATIONS**Certificate Course in Finite Element Analysis**

- Engineers CADD Centre, Hyderabad, India

Mar'00 - May'00

Certificate Course in I-DEAS

- Central Institute of Tool Design, Hyderabad, India

Dec'98 - Jan'99

AWARDS/ACTIVITIES

- Co founder of CAD/CAM group at Northern Illinois University under Pro/E division.
- University of Arizona graduate school Fellowship award winner for 2002 -2003 academic year.
- Northern Illinois University graduate school fellowship award winner for 2004-2005 for academic excellence.
- 'Best Teaching Assistant' award winner for spring 2003 semester in mechanical engineering department, Northern Illinois University for teaching excellence in 'Mechanical Vibrations' course.
- Secured 4th rank in undergraduate studies.

REFERENCES

Abhijit Gupta, Associate Professor, Mechanical Engineering, N.I.U, DeKalb, IL – 60115.

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More references available upon request. Work portfolio is available at www.nagulapalli.com.