

# DHRUV D KUMAR

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## SUMMARY

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- Developed a mathematical model for rubbing at bearing contacts of an anemometer to study precessional rubbing phenomenon and extended this study to real size turbines.
- Initiated, managed and designed a project creating a reaping tool which replaced conventional rotary mechanism with a reciprocatory one (increased efficiency).
- Designed pressure vessels as an intern at Larsen and Toubro (oil and gas special project division).
- Expertise in using automated solutions (SolidWorks, MATLAB etc), to simulate motion/stresses for various projects.

## SKILLS

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- **Engineering Skills:**  
Group/Team Management, Vibration analysis, GD&T, Product Development, Data Analysis and troubleshooting, Programming skills, Creative Problem Solving, Analytical Modeling/Design,
- **Computer Skills:**  
MATLAB, SOLIDWORKS, AUTOCAD, ANSYS (FEA), C/C++, XLTRC<sup>2</sup>, TECPLOT, MS OFFICE package.

## PUBLICATION

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- Kumar, D, Childs, D, "Dry-Friction Whip And Whirl Predictions For A Rotor-Stator Model With Rubbing Contact At Two Locations"- Submitted to ASME-IGTI

## EDUCATION

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- **Texas A&M University, College Station, TX (Recent Graduate- August 2010)** (Aug08-Aug10)  
Master of Science (Mechanical Engineering) – GPA 3.65/4.0  
Interests- Dynamics, vibrations, rotating equipment, FEA, manufacturing techniques
- **National Institute of Technology Kurukshetra, India** (July04-May08)  
Bachelor of Technology (Mechanical Engineering) – GPA 3.8/4.0.

## EXPERIENCE AND INTERNSHIP

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**Research Assistant-Turbomachinery Laboratory, Texas A&M University, College Station, TX** (Jan 09-Aug 10)  
*Precessional Characteristics for a rotor stator model of rotating machinery* (Advisor- Dr Dara Childs)

- Identified and modeled a solution for post calibration slowdown occurring in a commercially produced anemometer.
- The problem was identified as precessional rubbing of rotor stator model at the bearing locations. The idea was used to investigate similar phenomena in real sized turbines. (Thesis)
- Modeled a mathematical model for two point contact bearing and analyzed it for its vibrations signatures.
- Analyzed the whipping and whirling frequencies (reason for anemometer error) and validated them by testing against a nonlinear time transient model for the same. Also tested against experimental results.

**Internship-Larsen and Toubro Ltd, (Oil and Gas Special Projects), Mumbai, India** (May06-Aug06)

*Design of Pressure vessels for offshore oilrig drilling platforms*

- Pressure vessel thickness calculations using Finite Element (MATLAB codes) and ASME guidelines.
- Interpreting the piping and instrumentation diagrams (P&ID's).
- Training in industrial equipment manufacturing where a brief practical exposure was obtained in production of these enormous structures. (Manufacturing methods, safety requirement, understanding vendor specifications etc.)

**Internship-Oil & Natural Gas Corporation limited (Works Department), Mumbai, India** (May07-Aug07)

*Analysis of Feasibility Report for establishment of offshore Bassein Field Platform*

- Organizing a feasibility report, variable included payback period, discounted cash flow for different barrel costs.
- On site exposure to Uran oil field.

*Other experiences*

- Student worker- Turbine maintenance, disassembly, testing. TAMU Turbomachinery Laboratory.

## ACADEMIC PROJECTS

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**National Institute of Technology, Kurukshetra, India** (Jan 08 –july08)

*Designing a Reaper for small scale farming*

- Developed and designed an ingenious reaper model to reduce storage and improve efficiency.
- Designed the model using SolidWorks and machine design concepts for stress consideration on the mechanism.
- Self initiated the project and was assigned as group leader, managed and facilitated completion of a working prototype.

*Other projects*

- Design of Compressors, pumps and rotordynamic components of turbines as part of course curriculum
- Designed and developed CAD models for GEOSUN (hybrid geothermal+solar) air conditioner, Homemade CNC, Kiosk and Part/Assembly models, reaper using SolidWorks

## HONORS AND AWARDS

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- Ralf James and GH Thompson scholarship for academic excellence.
- Winner of contest designing self propelled cars, water rockets, mini motor boats and aerofoil glider.
- Winner of Robocar design and concept presentation.