

# Rohit Tripathy

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## Summary

I am a graduate student at the *Predictive Science Lab* at **Purdue University**. My research deals with high dimensional Uncertainty Quantification. Learning high dimensional functions is a problem of massive importance in various areas of engineering (flow in porous media, contact mechanics in granular crystals, molecular dynamics, for instance). At the same time, it is a computationally intensive problem and the computational cost rises exponentially with an increase in the number of dimensions (*curse of dimensionality*). We seek to devise probabilistic surrogate models based on Bayesian principles that reduce the computational expense of learning these high dimensional mappings and quantifies model-form uncertainties. In order to do so, we utilize *Gaussian Processes (GP)*, a non-parametric kernel based regression methodology. We also seek to understand how the model form uncertainty propagates through the model (*Uncertainty Propagation* problem).

## Education

- Master of Science(MS) in Mechanical Engineering(August 2014 - Current)  
Purdue University, West Lafayette, IN  
Current G.P.A.: 3.4  
Expected graduation: May 2016
- Bachelor of Technology(B. Tech.) in Mechanical Engineering(July 2010 - May 2014)  
VIT University, Vellore, TN(India)  
G.P.A.: 9.02

## Work Experience

- *Scooters India Ltd.* December 2012  
Worked on a project entitled "Complete Manufacturing and Assembly of a reverse gear sprocket". This project involved studying various stages involved in the manufacturing of a reverse gear sprocket and its eventual assembly into a typical Indian 3 wheeler auto-rickshaw.
- *Hindustan Aeronautics Limited* May 2012 - June 2012  
As a vocational trainee at HAL's *Transport Aircraft Division* in Kanpur(India), I was given a hands on experience in the operations of various departments within the factory including the Dornier shop , the loom shop , the hydraulics shop , the machining lab , the sheet metal and production lab , the CAD/CAM lab and the hydraulics and rotatables lab.

## Workshops attended

- *IMA Hot Topics Workshop - Uncertainty Quantification in Materials Modeling* July 28-31 2015  
Attended workshop sessions by various professional in academia and industry to learn basic methodologies within Uncertainty Quantification(UQ) such as Sensitivity Analysis, Generalized Polynomial Chaos, Gaussian

Process Regression, Bayesian Global Optimization etc. Also developed an idea about the current state of the art within the field of UQ.