

Statement of Research Interest

It was the usual day of 2014, I was on my way to my college and my clock was about to hit 12. Suddenly I felt so different because that was an earthquake of magnitude 7.9 on Richter scale. I saw a water tank falling down from a three-story building and I thought what if someone was there at the place where it had fallen? Just after 15-20 minutes, I came to know that Dharahara, one of the landmark of Kathmandu, was no more, I really felt broken. There were countless stories of loss in earthquake; most of them were due to collapse of Masonary structures in rural area. These incidents sting so deep in my heart and I made myself clear that I am going to do something that can help people living in remote areas to make safe houses from locally available materials. In addition, I also wanted to find various retrofitting technique by which I can protect various heritage structures of my country that are in the stage of damage.

I was in the middle of my fifth semester when I first encountered with the fact that bamboo are used as reinforcing material because it has high tensile strength like steel. From that day, I kept on browsing about structural property of bamboo. Every information I got about bamboo made me woo and woo. Then I started to find different building techniques but I did not find satisfying portfolio. I could not stop myself, I started looking for researches on bamboo, and I got a video of Prof. Lorna Gibson from MIT on YouTube. It was so inspiring for me that I came up with an idea of making bamboo house model to inform people regarding use of the bamboo in house. After around five months, I got a chance to put my bamboo house model in 1st National Civil-Mechanical Engineering Exhibition 2014. During my journey of making Bamboo house model, Not only I made just model but also I came to know the status of bamboo housing around the world and its impact on environment. To understand the building technique of bamboo house and rammed earthed house I participated in a workshop program conducted by Adobe and Bamboo Research Institute (ABARI), which is fully dedicated in designing and constructing sustainable structures using traditional material like earth and bamboo in Nepal.

Ever since I moved into my 10 x 10 foot room, which contains my bed, study table, a chair, a kitchen table and little utilities, I always tried to fit as good as I can. Even though I have never been fully managed, I have been trying to use every inches of my room that triggers my interest toward space management ideas. I always wonder what if I can fold bed or chair. While searching for foldable furniture on internet I came to know about origami. Once again, my search for origami in the field of structural engineering led me to the research paper on “Zippered tube” published by graduate researcher Evgeni Filipov of University of Illinois at Urbana-Champaign. This research introduced a new horizon in my mind; I used to think what if we could use that fold in bamboo houses? It can make bamboo structure stiffer in case hit by earthquake. Not only this but what if I can apply different folds in atomic level of any material and can control its structural behavior by any means?

After taking final exam of my Bachelor's in Civil Engineering, I was planning to work in place where I can link my interest in structure, natural materials as well as retrofitting. Our university usually took three month to publish the result and I was waiting for the result but then one consultancy named Picasso Consultant Pvt Ltd came to our college for internship offer for three month and if anyone wanted to continue after that, he/she can continue as their employee. I gave interview and become one of the two selected from my college for internship. There I directly involved in

Municipal Transport Master Plan (MTMP) projects where I used GIS and few building projects in which I estimated the building cost. During my days at Picasso softwares like Autocad, Etabs, ARC GIS, Autocad Civil 3D and Excel became handy but was something missing. I was just doing everything in a pattern, nothing was new after two and half months. The software in which I was using many constants and option, I actually didn't know the significant of each of those things. That was the thing that pushed me to find place where I can explore the unknowns and discuss new ideas. I found teaching learning was the only way where there is no limitation to your imagination and where you can keep learning new things. So, I applied in a college near from my place, Kathford International College of Engineering and Management. They called me for demo class and at last, I was assigned as full time Assistant Lecturer there.

It has been more than three year since I officially started my journey as a Teacher, Assistant Lecturer at Kathford International College of Engineering and Management, and now I am promoted to Lecturer. I have been teaching Theory of Structure I to fourth semester students, Theory of Structure II to fifth semester students and Applied Mechanics to Civil as well as Computer Engineering students. I have also been doing Lab Instruction for Civil Engineering Materials, Theory of Structure I and II, and Concrete and Masonary Structures. Kathford has its own Research And Development club in which I am one of the members. Through this club we usually conduct different training programs. Recently we have conducted training of LaTex, Matlab and Maple. The most important thing that fascinate me is the way that students ask me questions during my class and their expressions whenever I tell them about Civil Engineering marvelous structures. Their spirit to learn new things always give me positive energy to explore. Joining Kathford has made me more confident, oriented and equipped me with lots of skills to do research in my coming days. My quest is to know the structural behavior of natural materials and to make naturally sound structure out of it for which my current education is insufficient so I decided to pursue M.tech in Structural Engineering.

While Searching for Universities that can best fit for me, my search ended when I found IIT. I am an arts as well as music lover. I do draw pencil sketches when I am free and also I have learned to play guitar using video from youtube. IIT have very diverse subjects that really fills energy inside me. This university will surely open doors of other different interesting subjects about which I am unknown till now. Finally my future plan is to pursue a career in research for which IIT has got all those thing to prepare me for that.