

A little about me

Hey there! I'm Debanjali Chatterjee, a third-year mechanical engineering undergraduate. I'm an avid reader, singer and foodie, and I love to travel. Over the past one month I've discovered my passion for cooking too! This is an account of my research experience as part of my summer internship at Purdue University. Hope you like it!

How it all began:

Research has fascinated me right from high school and a research career in core mechanical engineering, specifically in fluids and transport phenomena was the natural choice for me. Having spent my sophomore year summers in JNCASR, a premier research institute in India, I decided it was now time to explore the research environment overseas. Purdue University being one of the top universities in my areas of interest, I didn't think twice before applying for their internship program. On 17 December 2018, I woke up to a mail which finally put an end to the long wait: I had been selected for summer internship as part of the Purdue Undergraduate Research Experience (PURE) program! After a few mails and a phone call with my prof, I dashed off the acceptance mail. This was followed by a host of work related to visa and accommodation. The day I got my visa stamped on my passport was when I was able to fully appreciate the magnitude of the situation. My first time abroad, in the United States of America! Too good to be true, but it really was happening!

Time flew and the day of departure arrived. Two 9-hr flights (with a 3.5-hr layover) and a 3-hr shuttle journey later, I reached my apartment in West Lafayette. Tired and terribly jetlagged, I lay awake all night, hoping to make this summer a memorable experience, something that I would cherish lifelong.



PURE 2019 cohort

Work and lab:

I'm working at the Energy and Transport Sciences Lab (ETSL) in the Department of Mechanical Engineering under the guidance of Prof. Partha Mukherjee. My project is based on analysis of electrochemical transport phenomena through porous media. This has important applications in fuel cell technology. What's interesting about my work is that going beyond the conventional technique of extracting properties of porous media through numerical simulations solving charge and mass transport equations, I'm working on developing a machine-learning based approach for the same. People have started working on this very recently and this is proving to be a huge learning experience for me.

Prof Mukherjee's lab group is huge: there are around 20 students pursuing their PhD/Masters. We are 5 undergraduates working for the summer, all of whom have become close friends now. Each of us has been assigned a 'peer mentor' who is a PhD or PostDoc student and is

responsible for guiding us on our respective projects. My mentor, Navneet, is probably the sweetest and most cheerful person in our lab. In spite of being senior to me, he's humble and always ready to learn, even from undergrad interns like us.

We have lab group meetings every Friday. One group meeting to remember was the one where we got to witness a Master's thesis defense. That gave us a very good idea of the quality and quantity of research we're expected to perform during our time in grad school.

Prof Mukherjee is very interactive. He's very busy but whenever he is in lab, he makes it a point to talk to us, not just about work but also about general things. One day he told us about his love for Harley-Davidson bikes. Another day he joined us at lunch (He has told us he'll take us to his house soon!). Every Monday he asks me "ei week ki ranna korle" (What did you cook this week?) It feels great watching people of such stature being so humble and down-to-earth. Oh, and I must add one more thing here. Daniel is a PhD student from Mexico, but he's essentially half-Indian because he loves Indian food and is a die-hard fan of Hindi movies. The other day he told me he has planned to watch DDLJ as a reward after completing his PhD!



My lab: Flex Lab at Discovery Park



Undergrad interns with Prof Mukherjee

Life in the US:

Food:

My lab is quite far from my apartment, so I pack lunch from home. Knowing how to cook is a huge advantage, because a. You can sustain yourself on McD/Subway/cup noodles/Maggi only for so many days, and b. Cooking yourself saves a lot of money. Walmart Zindabad! The first time we went, we spent 6 hours there. It's so huge and there are sooooo many things you get there, it's very difficult to resist putting every damn thing in your trolley. So many varieties of meat, bread, cheese, sauces, fruits, vegetables (cut and packaged!), cake, pies, pudding, chips, cold drinks..the list will go on and on. There's also an Indian store nearby where you get a variety of ready-to-eat packaged Indian foods (dal, vegetable/paneer curries, parathas) for days you're too tired to cook. If you want to eat out, there are several restaurants serving various cuisines from all around the world, in addition to the ever-popular McD and Subway.

Vegetarians, in spite of having somewhat limited options as compared to non-vegetarians, do not face much of a problem here.

Campus and surrounding areas:

Purdue campus is beautiful. Wide roads and pavements, gardens with lush green grass and brown sloping-roofed buildings create a picturesque scenery, the bright blue sky adding to the beauty. You might also find a squirrel or two hurriedly crossing the road! Purdue Memorial Union and the nearby Chauncey area have many shops and eateries and the place is always bustling with people. Walking long distances won't tire you because the weather is pleasant



Things we cook in Sunday night get-togethers: Egg curry and rice, chicken fried in BBQ sauce; Eating out: Buffalo Wild Wings, my weekly Saturday lunch salad at Subway, Oishi: a chinese restaurant and burrito at Chipotle

(though unpredictable sometimes), temperatures reaching not more than 25-26°C in the day. There is also a bus service which is free if you show your Purdue I-Card.

Several events are organized as part of the PURE program. We had two compulsory sessions on grad school applications (free pizzas yay!). There have been quite a few talks and seminars by professors from various departments. There was a GRE logistics session sometime back. On the fun side, we have the Summer Undergraduate Social scheduled later this week and a Harry Potter trivia night as well!

There are several places to visit close by in Lafayette. These include the Colombian Park and Zoo, Wolf Park and the Tippecanoe war memorial (which we visited on Memorial Day). The Wabash Heritage Trail along the Wabash river is a treat to the eyes. Recently there was a Mosey Down Main festival in Lafayette which had live performances by street artists and music bands, lots of food and shops selling several things like clothes, earrings, wall hangings and what not.

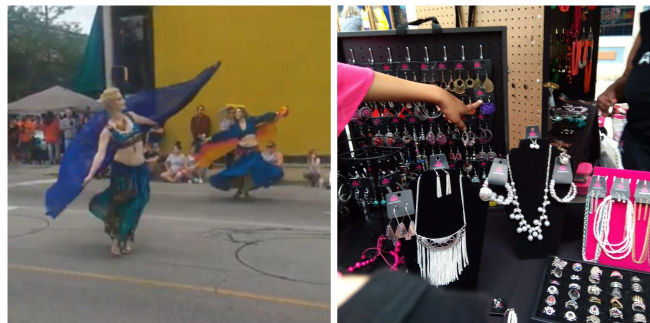
I'm only one month into my internship and the workload is quite heavy, so I haven't yet got the opportunity to visit nearby big cities like Chicago and Indianapolis. But I plan to visit them soon. Saving the best for the last!

From bus drivers and random people on the streets wishing "Good Morning" or "Happy Weekend" to the director of our lab asking us for tips on how to grow his cactus plants well, everyone is very friendly and eager to help. One time we got lost and had walked almost 3 km on a highway when a police car stopped by and the officer was kind enough to drop us home. Be it on small roads or highways, if there are people waiting to cross a road, cars will stop and let pedestrians cross first. Unlike in India, where vehicles don't stop and you have to check when the road is empty so that you can cross safely!

One major culture shock is that you can directly drink tap water. Since I've mentioned drinks, all major eateries have unlimited refills. And there are so many flavors of cold drinks! There's cherry coke, vanilla coke, zero-sugar coke, strawberry sprite, to name a few. Cold drinks are cheaper than water, and hard drinks cost much less than that in India!



Purdue Campus, Colombian Park and Tippecanoe War Memorial



Mosey Down Main

One month into my internship, I can say with certainty that I've settled down completely and enjoying my life and work. On the work front, machine learning is something in which neither me nor my mentor has any prior experience. Both of us are working on this project together. Hence, I do not have any readymade answer to my queries. My mentor and I both have to clear our doubts ourselves. We look up things to read and implement together. We have an independence as to how we want this project to proceed. On the home front, making my own shopping list, deciding what and how much to cook, trying out new food items, all these are entirely my decisions. As someone who has always lived close to home (I'm a ghaati), this internship is helping me get out of my parents' protective shell. Halfway round the world, it is this independence and the power to make my own choices and decisions which I'm cherishing the most.

Meeting new people in my lab as well as the adjacent labs, getting a glimpse of their life and work is an eye-opener to the diverse backgrounds of people working in this country and the myriad of topics on which work is going on in the research community. And of course, weekend outings and Sunday night get-togethers (where we cook dinner together) add to the fun quotient!

There is so much more I can write, but this is a good time to stop. Turns out my craze of doing a foreign internship in my pre-final year was not a bad decision after all! With one more month remaining, I wish to make this internship a milestone in my academic career. I'll return with lots of chocolate, cookie dough, barbeque sauce (:P) and a bag full of memories!

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