

Name : Shubh Vachher
BITS Pilani ID : 2014A8PS0471G - Valid until Jun 2018

Position Applying for : Student Intern/ Research project based Exchange Student (Jan '18 to Jun '18)
Research Assistant (Jul '18 to Jul '19)

My long term goals and objectives :

Pursuing a masters degree in HCI with a strong focus on machine learning. With the advancements in technology nowadays, I believe, making human computer interaction easier, less stressful and overall more productive is now at the forefront of technological progress. Given my love for machine learning and its applications in user intent prediction, I would love to pursue HCI and ML together with you.

Project Idea :

Using progress made at PCG lab to come up with a machine learning based solution to 10 finger in air typing.

Sub Ideas and Goals:

- Make use of existing [Leap Motion sensor study](#) for 3d finger coordinates data as a time series data. Apply methods of signal processing to generate feature vectors to train ML model for key stroke prediction.
- Make use of data glove for similar input in order to allow for unrestricted movement of subject's hands (independent of Leap Motion sensor placement)
- Use the haptic feedback progress made with [ETH Zurich AIT Magtics](#) or [NUS HCI HaptiColor](#) for wrist wearable haptic feedback on keypress.
- Use various Natural Language techniques to predict next word as well as correct current entry to improve typing accuracy

Considering the lab has many ongoing projects, I would also like to highlight my current skills that may come handy in further projects at the lab.

Other skills I have that may be useful in your HCI studies :

- Image Processing using OpenCV
- Internet of things(IoT) - Networking
- Electronics - Sensor interfacing with microcontrollers or microprocessors
 - I have worked with Arduinos and Raspberry Pis and would love to readily learn more microcontroller and microprocessor interfacing if necessary.