

Statement of Research Interest

As an avid learner, I always look for chances to learn more and more. For my incessant ambition towards learning, higher studies have always been my primacy. To make my ambition fulfill I have involved myself in research activities during my under graduation in Biomedical Engineering. Now I want to take my research experience to next level by going for an M.Tech degree.

My research works during my graduation involved two of the most vital division of biomedical science. One is biomedical instrumentation, and another is biomedical image processing. In biomedical instrumentation, my focus was to use the knowledge of embedded systems and microcontrollers to solve the problem of intravenous treatment methods. The problem I and my team was seeking to solve is to reduce the mistakes that occur while intravenous fluid treatment. We were focusing to design such a device that can replace human activity to control and monitor the flow rate. The usage of microcontroller and embedded systems made this happen to automatically monitor the intravenous flow rate and control when it is necessary. In the study of biomedical image processing, which is also my thesis work, I have applied the Convolutional Neural Network (CNN) to classify medical images. I have used the AlexNet model of CNN to classify thyroid nodules from ultrasound images. Our intention was to find an alternative to the invasive techniques of determining whether a nodule is benign or malignant.

In continuation to my previous research works I am focusing to contribute more to biomedical research field. I am looking for using more mathematical and numerical models to solve biomedical problems. Using deep learning algorithms and CNN to classify other medical images from different modalities like MRI, CT, X-ray etc. for various purposes. At a more specific level I want to apply transfer learning application of CNN models to classify cancer cell images. If possible I want to make this approach available for all other diseases which can be diagnosed through medical imaging.

For making my next research goals achievable I prefer that the “School of Medical Science and Technology, IIT Kharagpur” will be the perfect place for me. I find these diverse research areas in medical science and technology and diligently designed curriculums more than compatible for me. I believe that M.Tech program in this institute will provide me the meld of technical knowledge and best guidelines to take my research experience and knowledge next level. I am waiting eagerly to make this happen and prove myself as a great addition to this institution.