



February 23, 2021

## Notice

### **Subject: Regarding CSE 400 for Summer 2021 semester**

This is to inform all the concerned students of the department of Computer Science and Engineering who are interested to register for the course **CSE 400: Thesis/Project I** in Summer 2021 semester that students need to follow the following procedure:

For students interested to do research as part of the course **CSE 400: Thesis/Project I**

- Interested students need to submit details (in the attached form) of them by **February 28, 2021, Sunday, 12:00 PM**. It should be noted that students submitting these forms must meet the required criterion of completing 110 credits as of Fall 2020 semester with a minimum CGPA of 3.25. The students are requested to add three interested topics.
- Research article provided to the students by **March 4, 2021, Thursday** based on which they have to present their understanding on **March 19, 2021, Thursday, 10:00 AM**.
- Only students with considerable performance will be allowed to take Thesis.

For all other students interested to register for the course **CSE 400: Thesis/Project I**

- Interested students are advised to form group and contact any of the supervisors listed below. It must be noted that each supervisor has a limited slot for supervising groups. So, all the students are advised to contact supervisors by **March 26, 2021, Thursday**. If any supervisor is convinced to supervise a group, they will report it to the department. An updated slot list will be published on Later.
- Students need to meet the required criterion of completing 100 credits as of Fall 2020

For both Thesis and Project a group can be of at most 2 persons.

The list of supervisors with available number of slots are listed below.

Supervisor Name	Number of slots
<a href="#">Ms. Tasnim Zahan (TZZ)</a>	3
<a href="#">Mr. Al Mehdi Saadat Chowdhury (SC)</a>	3
<a href="#">Mr. Noushad Sojib (NS)</a>	3
<a href="#">Mr. Shahadat Hussain Parvez (SHP)</a>	3
<a href="#">Mr. Pranta Sarker (PSD)</a>	3
<a href="#">Mr. Muhammad Mahir Hasan Chowdhury (MMH)</a>	0
<a href="#">Mr. Buddha Chandra Banik (BCB)</a>	3
<b>Total Slots</b>	<b>18</b>

*\*Click on supervisors name to check research Interest*

Shahadat Hussain Parvez  
Lecturer, Department of CSE  
Convener, Thesis/Project Committee  
North East University Bangladesh



## Research Interest of " Tasnim Zahan"

### Research Interests:

Machine Learning, Computer vision, pattern recognition, image processing

### Research/Project Description:

- 1. Ongoing research:** Handwritten Optical Character Recognition (HOCR) system for Bangla script. We are working on a baseline system for HOCR. It has different modules, in which, the scope is available for further extension. Here you can do research as well as can work on a previously published paper. So, you have the chance of both thesis and project work.
- 2. Machine Learning and Other Projects:** You can come up with your own idea based on my interest. Here you can work on 'Reproducing a paper', or can execute your project idea with proper analysis and use of appropriate algorithms.

Try to form a group with two members, gain knowledge on the interested field, and contact me with your specific interest. There are no shortcuts to success only hard work. So, work hard and earn your goal.

Required Knowledge: Python, machine learning, image processing

## Research and Project Interest of "Al Mehdi Saadat Chowdhury"

### General Overview:

- This semester onwards, I will be supervising ONLY project works.
- I had been very busy lately. *This really limits me on the type of projects and the number of students I can take.* Please consider this first before asking me for supervision. If you and your project need significant attention, I may not be the best person to work with at this moment.
- Having said that, my first preference will be to take students who wants to work in the field of Computer Vision and/or Machine Learning and other closely related fields.
- I would also happily take web projects as long as you can work seriously, on your own, and only need someone to press you for fast and better completion of the project work.

### Group Formation:

- Maximum two students. CGPA difference between any two members of the group can at most be  $\pm 0.50$ . This means, if your CGPA is 3.50, then the CGPA of another member of your group can be between 3.00 to 4.00. Remember that, academic group does not form from friendship, rather from necessity. Try to select your group members wisely.
- Every member of the group will be judged individually. Every member will be assigned individual tasks. Combining both tasks will form your total project.

### Getting Selected:

- Number of slots that I have got this semester will be announced by the department.
- Contact me immediately (through Facebook messenger) after you get the notice. The earlier you contact, the better it will be for you. In your message, share your project idea and how do you plan to solve it (you can write in Bengali). Make sure you include enough details about the project, from which I can have a complete picture of it.
- If multiple students talk to me about their project, then I may need to select only a subset of them based on the number of slots assigned to me. Selection will be based on many different factors, the most visible of which would be the quality of the project itself and the students who wants to solve it.
- Currently I am not available on PHONE or WHATSAPP. The only medium for contacting me at present is FACEBOOK or EMAIL ([amschowdhury@neub.edu.bd](mailto:amschowdhury@neub.edu.bd)). Send me a message anytime (use Facebook messenger first). Please expect a delayed reply though.

### Read this section for project idea:

- If you are interested to work with me, you can choose any of the project types mentioned below:
  - **Project Type -1:** This type of project is called "REPRODUCING A PAPER" and it is my favorite project type. Here, your job is to implement a paper along with all its analysis as if you had written the paper yourself. The paper you want to reproduce will be taken from any of these mentioned conferences: 1)AAAI/IJCAI, 2) NeurIPS/ICML, 3) CVPR(CVPR is very interesting). These types of projects are truly outstanding. By reproducing a single paper, you will learn how research is done internationally; you will also understand how to prepare yourself for machine learning based industry jobs.
  - **Project Type -2:** This is a traditional machine learning project (like previously done by our students), where you select a problem, a dataset, and some algorithms that you may want to apply to this problem. For project idea, look at these websites: 1)



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**Thesis/Project Fields of Faculty Members**

<http://cs229.stanford.edu/projects.html> 2) <https://archive.ics.uci.edu/ml/index.php> 3) <https://www.kaggle.com/datasets>. You can also generate your own problem, create your own dataset, and apply several machine learning algorithms that you have learned in class.

- **Project Type – 3:** Traditional web projects. You are very much accustomed with this type of projects; so much so that I believe you do not need any explanation from my side. Make sure your project idea is unique, helpful for the society and was never attempted earlier in our university. You both should also be proficient in coding this project.
- What grade you can expect from your project (*these are department criteria, not mine. This means, with any supervisor, your expected grade will fall under this category*):
  - According to the guideline of the department, a machine learning project may be considered for A+ / A / A- grades only if the project is outstanding; students has scientific justification of all the algorithms they used to solve the project; students understand ins and outs of all the algorithms they use – both theoretically and practically. Common questions you will face when solving such projects are: 1) Why have you selected this algorithm instead of that algorithm? 2) How the algorithm you selected works? 3) There may be alternative methods that may work better. Have you tried any of these methods? 4) If you are using machine learning library for these types of projects, then why have you used this parameter instead of that parameter in your code? Moreover, the quality of your output will also determine your grade.
  - Any project that looks like the above, but student's performance on the project was not up to the mark will be graded in the range B+ / B / B-. For example, if a student has successfully implemented a project but they failed to answer questions which clarifies the project will be downgraded to this category.
  - Any simple project will be graded C+ / C / D.

**Checklist:**

If you can answer YES to EACH of the question below, then working with me is an option for you. Otherwise, not working with me is better.

- 1) Are you really committed to doing a good work? (If you simply want to finish your undergraduate degree, then I am not the right person to work with. I expect you to work very hard.)
- 2) Can you work every single day for your project? (Most of the day you will be working. Some days you can take rest.)
- 3) Is a good grade not your principal concern? (If you are grade hungry, then remember that I am a strict grader).

May Allah SubhanahuWaTa'ala give barakah in your education.



## Research Interest of "Noushad Sojib"

I am interested in intelligent agents that learn from data/experience and decision making problems. Following are some of the fields to work on.

- Robot Learning (platform: we will choose a robot simulation environment, kido robot)
- Machine Learning
- Reinforcement Learning

### **I expect you have**

- Regular communication with me (Either you worked or not(it's okay) )
- Not complaining but love to learn
- Good skill in python

Please talk to me as early possible. I would be happy to discuss in details about possible topics in a zoom session.

### **Contact:**

1. Email: [nsojib@neub.edu.bd](mailto:nsojib@neub.edu.bd)
2. Phone: 01738610213 (In case I couldn't pick-up your call, please send me a SMS)
3. Zoom chat: (you will get connected once you start working with me)

Best wishes.

## Research and Project Interest of "Shahadat Hussain Parvez"

If you read my previous interest or looked into works done by groups under my supervision, you may find this page confusing. There is nothing to be confused about. People's interests are not static and they change over time. So has mine.

I am interested to supervise projects under the following broad topics.

- Embedded Systems
- Robotics

### Embedded Systems

Embedded Systems is an umbrella term used to describe computing systems that are generally designed to be self sufficient and power efficient. One of the trending field among embedded systems nowadays is Internet of Things (IoT).

IoT includes a wide variety of concepts bundled together. Primarily IoT includes some sort of embedded device which typically has internet connectivity to either be controlled from remote locations or be able to send data to remote locations from where these data can be used for further analysis. I am interested in supervising students who will design and implement IoT device that will be useful. Yet another novelty internet connected gadget is of no interest to me.

For working on IoT design and implementation, knowledge and experience of any embedded platform is helpful. And since it should be connected to the internet, being well versed in internet technologies is ideal.

### Robotics

A fully functional robot will be very hard to build in 8 months, so implementation of core robotic concepts will be also appreciated. Core robotic concepts can include multiple degrees of freedom robotic hand (with five fingers and all). Many other cool robotics-based project can also be done. I am highly interested in supervising projects that are robotics based.

For doing any sort of robotic projects, prior experience of robotics is highly necessary, as without such prior knowledge you will stumble every day.

### Miscellaneous

Other than the above two fields if you want to continue with very interesting project ideas, I will be willing to supervise your project. But you should know that I am not interested to supervise any generic web based project. If you want to work on web technologies, your project should explore some new interesting ideas like new user interaction model, or some new way of using existing technologies.

### Contact

If you are interested to work under my supervision, you have to generate your own project idea and contact me through my email at [shparvez@neub.edu.bd](mailto:shparvez@neub.edu.bd) or through messenger at [m.me/shparvez001](https://m.me/shparvez001). Before you contact me you have to form a group with 2 members. I am currently not interested to supervise single member group.



## Research Interest of "Pranta Sarker"

### **General overview (Thesis):**

- At first, I have an opportunity to engage **not more than one** group this semester.
- Currently, I am running my thesis under Blockchain technology. My thesis work actually focuses on assessing the Trust for many virtual resources by Blockchain. This will be extended in the near future.
- On other hand, I am also interested in Data Compression as well. More specifically, if anyone has interest in encoding-decoding technique as well as in Huffman algorithm and its mechanism, implementation, application you are welcome to me.
- Finally, I do not have a large amount of experience about Machine Learning or its application in the research field though if anyone has fascination about this field and wants to make an improvement by implementing this knowledge you are also welcome. Besides, I'll try to gain some knowledge and experience from this journey as well.

### **General overview (Project/Application):**

- As there is no need to gain a huge amount of specific field of knowledge also a certain amount of Web based project/application has been completed so far under my supervision that any one who is interested here is welcome.
- Also I am interested in Android, IoT or any other related project or application based work.

### **Group formation:**

- A group is constructed by maximum 2 students for both thesis and project.
- Thesis interested students must have a CGPA 3.50 minimum so far and also eagerness to work hard.



## Research Interest of "Mahir Hasan Chowdhury "

### 1. Research Interests:

My research interest lies in the following couple of fields.

#### 1.1 Keyphrase extraction from Bangla document:

Keyphrase are the bunch of words that summarizes a topic. It is used for text summarization.

Prerequisite: python/java, machine learning, neural networks, word2vec, tensorflow, sklearn.

#### 1.2 Diabetic retinopathy using CNN:

Using image of diabetic patients eyes to detect diabetic applying image processing algorithms.

Prerequisite: python/java, machine learning, neural networks, image processing, tensorflow, sklearn.

### 2. Project Interests:

#### 2.1 Online judge for NEUB:

#### 2.2 NEUB CSE society website:





## Research Interest of "Buddha Chandra Banik"

**Gesture-based keyboard.**

**Description :**

As we have implemented the first gesture-based in Bengali, we are trying to find a more user-friendly approach for detecting words from a user gesture. and try to find a pattern in gesture detection. Anyone interested in this project can contribute by finding an efficient approach in gesture and improve the word prediction using a better machine learning and neural networking approach.

**Beta version:** <https://play.google.com/store/apps/details?id=com.bangla.keyboard&hl=en>

**Project:**

**Android:**

Augmented Reality Android App, Recommendation.

Prerequisite: Java , Android.

**Project Name:**

**Web:**

**Prerequisite:**

**Front end :** HTML, CSS, JQuery, Javascript,Bootstrap

**Back end :** Php, Lavavel, Mysql.