

# SHADMAN SHAHID

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## CAREER SUMMARY

An engineering graduate from Bangladesh University of Engineering and Technology majoring in electronics engineering. 1 year experience of working in a photonics research lab. Interested in the research of **photonic technologies for state-of-the-art computational applications**. Adept in **electromagnetic FDTD technique**, **nano-electronic device modelling in MATLAB/Python**, **VLSI design tools**, and **Deep learning algorithms**. Enjoys basketball, tutoring and graphic designing in spare time.

## PROFESSIONAL EXPERIENCE

### MIS Department

#### Advanced Chemical Industries (ACI) Limited

##### MACHINE LEARNING ENGINEER

Dhaka, Bangladesh

July 2021 – Present

- Implemented a sentiment analysis dashboard from newspaper data scraped from webpages of popular Bangla dailies for tracking the company reputation, relevance and presence
- Developed a retail-product embedding model, for more natural and up-to-date prediction of product similarity and recommendation.
- Updated and maintained the Personalized promo and customer lapse dashboard for ACI-logistics.
- Developed a rudimentary chatbot for ACI-Logistics using RASA framework.

### Nanophotonics Research Group

Department of Electrical and Electronic Engineering,  
Bangladesh University of Engineering and Technology (BUET)

Dhaka, Bangladesh

March 2021 – Jan 2022

##### RESEARCH ASSISTANT

- Primary research focus:* Physics driven research of periodic hole array designs for Tamm State based plasmonic lasers
- Authoring funding proposals related to solar photovoltaic (PV) system optimization, floating solar PV systems and flat panel display innovation
- Management of day-to-day activities of the lab and ensuring functionality of devices and hardware.
- Mentoring undergraduate students in their thesis work.

## EDUCATION

### Bangladesh University of Engineering and Technology

Dhaka, Bangladesh

#### M.Sc in Electrical and Electronic Engineering

Ongoing

CGPA - 3.75 on a scale of 4

### Bangladesh University of Engineering and Technology

Dhaka, Bangladesh

#### B.Sc in Electrical and Electronic Engineering

Graduated - Feb 2021

CGPA - 3.86 on a scale of 4 (Top 6%)

### Notre Dame College

Dhaka, Bangladesh

#### HIGHER SECONDARY CERTIFICATE: GPA - 5 ON A SCALE OF 5

Graduated – Aug 2015

## RESEARCH FOCUS

Photonic design optimization, || Photonic integrated circuit, || Machine learning techniques in photonic design, || Photonic inverse design, || Nanophotonics and plasmonics || Computational electromagnetics

## RESEARCH PUBLICATIONS

### A merged lattice metal nanohole array based dualmode plasmonic laser with an ultra-low threshold

#### NANOSCALE ADVANCES, ROYAL SOCIETY OF CHEMISTRY (UK)

Dec 2021

- Authors: Shadman Shahid, Shahed-E- Zumrat and Muhammad Anisuzzaman Talukder
- Dual-mode Tamm plasmon resonance – observed at the interface between a multi-layer dielectric stack and a metal film – is exploited to generate dual-wavelength lasing using a merged lattice nanohole array.

### Dual-wavelength hybrid Tamm plasmonic laser

#### OPTICS EXPRESS, OPTICA PUBLISHING GROUP

Jun 2022

- Authors: Shahed-E- Zumrat, Shadman Shahid and Muhammad Anisuzzaman Talukder
- Simultaneous excitation of (hybrid) photonic and Tamm plasmonic modes/states come together in a double DBR - metal structure for efficient dual-mode lasing.

## PROJECTS

### Retail product embedding generation

#### for product recommendation | Project Documentation (WIP)

Dec 2022 - Ongoing

- Developed an embedding model for a more natural product recommendation and filtering. Used a customized derivative of **word2vec** called **item2vec** to train from raw shwapno retail invoice data. (WIP: Work in progress)

## Personalized-Promo Dashboard

Dec 2022 - Ongoing

- Dashboard for auto promo generation based on next-month purchase and lapse prediction from retail data. Automated periodic (monthly) retail-invoice data extraction with a **Cron**-job script and database procedures. . Used **LSTM** and **XGBoost** for prediction.

## Sentiment Analysis Dashboard | Project Documentation (WIP)

Nov 2022 - Apr 2023

- A dashboard that analyzes the sentiment of text data scraped from popular Bangla dailies. The dashboard was built using **Python** and **Django**. Scraping was done with **BeautifulSoup** and **Selenium**. Used the `bertweet-base-sentiment-analysis` and **gensim** package to model topics. (WIP: Work in progress)

## Inverse design of thin film stacks through a generative residual global optimization network Res-GLONet | Project Report

April 2022

- Faster optimization of a customized thin film dielectric stack for a given response, with the help of a generative neural network coupled to a Transfer Matrix Method (TMM) solver. Idea devised by **Jiaqi Jiang** and **Professor Jonathan Fan**

## An Investigation into Dual-mode Lasing Response in planar multi-layer Plasmonic laser Systems

UNDERGRADUATE THESIS

Dec 2020

- Two design approaches - both already published as mentioned previously - have been proposed in order to elicit dual mode lasing response in planar multilayer plasmonic systems for nanophotonic applications.
- Supervised by: **Professor Dr. Muhammad Anisuzzaman Talukder**

## Hamming error correcting code generator and reciever | Project Report

Dec 2020

- This project shows a prototype of a single forward error correcting system based on least Hamming distance principle. The system was implemented in **verilog** via *Cadence Innovus solution*.

## Implementing Tetris Game using Verilog | Project Report

Feb 2019

- A simplified version of the Tetris game was implemented using an FPGA (Field Programmable Gate Array) board - EPF10K70 device - a FLEX 10K device. The EPF10K70 device was programmed using Verilog HDL.

## TECHNICAL SKILLS

<b>Programming Languages</b>	Python, Verilog, C, C++, MATLAB
<b>Database Management Software</b>	Microsoft SQL server
<b>Tools &amp; Softwares</b>	MATLAB, Lumerical Suite, Cadence Suite, COMSOL Multiphysics, Microsoft Excel
<b>Deep Learning Tools</b>	Pytorch, Tensorflow, Keras, Scikit-learn, Spacy, etc
<b>Web development frameworks</b>	Django, Pelican
<b>Editing and Designing Softwares</b>	Origin Pro, Adobe Illustrator, Photoshop
<b>Markup Languages</b>	LaTeX

## LEADERSHIP AND VOLUNTARY EXPERIENCE

### IEEE BUET Student Branch

CHAIRPERSON - IEEE IAS BUET SB Chapter

July 2019 – Mar 2021

PROGRAM COORDINATOR

Sep 2017 – Jul 2019

VOLUNTEER

Jan 2017 – Jul 2017

- Organized events, workshops with different student organizations under IEEE Bangladesh Section.
- Was chief instructor of workshop on Lumerical Inc. (FDTD) for undergraduate students of BUET.

### Notre Dame Debating Club

Notre Dame College, Dhaka

ENGLISH DEBATER

Sep 2013 – Dec 2015

- Participated and won in numerous debate competitions in school and college level.
- Served as Asst. Gen Secretary of Notre Dame Debating Club for the year 2015.
- Was the lead designer of publications, posters, logos and merchandise for the club during my tenure

## AWARDS AND ACHIEVEMENTS

- Nominated in **University Dean's list** for three out of four levels of undergraduate study.
- **University Merit Scholarship** for seven out of eight terms of undergraduate study.
- **1st prize** at Inter University Poster Presentation Contest, at **Essonance 2017**

BUET, Dhaka

BUET, Dhaka

IUT, Gazipur, Bangladesh.

## REFERENCES

### Dr. Muhammad Anisuzzaman Talukder

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Bangladesh University of Engineering and Technology

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