# Asif Al Faisal

**Address:** Banasree, Dhaka, Bangladesh
**Contact number:** +880-1799 828 459
**Email:** faisal.iit.du@gmail.com
**GitHub:** AsifAlFaisal
**LinkedIn:** asif2k9
**Personal website:** asifalfaisal.github.io
**Date of Birth:** Nov 04, 1992

## CAREER PROFILE

**Asif Al Faisal**

Data Analyst | International Maize and Wheat Improvement Center (CIMMYT)

A Data Science Enthusiast who is passionate about Data Analytics, Machine & Deep Learning. I consider myself perceptive, results driven and team player. I have more than two years of working experience of data analysis in the Agricultural research domain. For past two years I have been working with multiple research groups in wide variety of research projects that are enabling me to grow extensive expertise in the agricultural research field. With all my working experience and personal endeavour, I have been developing myself with diverse set of skills that includes data management, data curation, algorithm development, predictive modeling, multimodal analysis, problem solving, teaching experience and team management.

## RESEARCH INTERESTS

Application of artificial intelligence (AI) in food system and remote sensing, complex system analysis, explainableAI (XAI), environmental regulation.

## KEY SKILLS

- 2+ years of research experience with South Asian agricultural management system, data management, data curation, algorithm development, data analysis, predictive modeling and **model interpretation**.
- Four (4) years of experience in telecommunication network system, data handling & **team management**.
- **Mastery** in **Python Programming.**
- **Sentinel-1 SAR** image processing in **Google Earth Engine**.
- **Strong expertise** in large scale **ECMWF Reanalysis (ERA) weather data** processing in both **R** and **Python**.
- Strong grasp in **Geospatial Data Science with python** and open source softwares.
- In-depth knowledge in graph theory as well as in **Graph Neural Network**.
- Special expertise on implementation of deep learning models such as **convolutional neural net** and **sequential models** in agriculture and environmental application.
- Expert implementation skills in **PyTorch**, **Networkx**, **Pytorch Geometric (PyG)**.
- Strong data visualization proficiency with **Plotly**, **Matplotlib** and **Seaborn**.
- A handful of experiences of dashboard development using **Streamlit** and **Dash**.

## ENGLISH LANGUAGE PROFICIENCY

| | | | | |
|---|---|---|---|---|
| IELTS Academic Overall Score - 7.0 | Listening: 7.0 | Reading: 8.5 | Writing: 6.5 | Speaking: 6.5 |

## EDUCATION

2018 **M.S. in Information Technology**
IIT, University of Dhaka, Bangladesh

2014 **B.Sc. in Electrical and Electronics Engineering**
Khulna University of Engineering and Technology, Bangladesh

## PUBLICATIONS

- M. A. Rahman **A. Faisal** T. Khanam M. Amjad and M. S. Siddik "*Personality detection from text using convolutional neural network*" pp. 1-6 05 2019. Available online: Click here.
- ARRCC programme newsletter. "*Innovative new crowd sourcing tool for gathering crop disease reports developed in South Asia*" p. 2 09 2020. Available online: Click here.

## RESEARCH EXPERIENCE

### Application of Graph Neural Net for *In silico* Prediction of Physicochemical Properties of Chemicals

The goal of this research is to develop QSAR/QSPR models for predicting physicochemical properties and environmental fate endpoints of chemicals for regulatory purposes. The steps of this research are,

- Compare Graph Neural Net (GNN) model performance with an existing work where they have used weighted K-Nearest Neighbors (kNN).
- Train GNN models with multiple datasets to get more robust prediction of physicochemical properties.

Much of these works have already been completed and the manuscript writing is ongoing.

### Big Data Analytics for Climate-Smart Agriculture in South Asia (BigData2CSA) Research Project

Worked in a cross-country (Bangladesh, India, and Nepal) research project which led by *CIMMYT*

- Primary goal of this research project is to collect and interpret a wide variety of primary agronomic management and socioeconomic data from tens of thousands of smallholder rice and wheat farmers.
- After data collection, **I developed a novel multivariate method** for outlier detection and imputation.
- Then, **I developed** R-scripts to extract secondary **remote sensing** and **weather data** in the geolocations of the survey and merged with primary data.
- I am also heavily involved model interpretation part where we used **explainableAI (XAI)** methods like LIME, ALE (manuscript writing ongoing).

### Asia Regional Resilience to a Changing Climate (ARRCC) Research Programme

The ARRCC program is managed by the *UK Met Office*, *CIMMYT* and *University of Cambridge*.
This project is based on an early warning system to deliver wheat rust and blast disease predictions directly to farmers' phones in South Asia.

- In this project, **I developed** a new crowd sourcing web-based tool (link here) that automatically harvests media reports on wheat rust disease occurrence and locations from the media in South Asia. These data then provide information to drive disease forecast models.
- Pilot testing of the tool has resulted in promising results, finding sources from where wheat rust diseases are appearing and spreading, significantly aiding meteorologically aided disease forecasting work.

### Personality Detection from Text using Convolutional Neural Network

This was my **MS thesis work** that went into publication in an IEEE conference. This was a Natural Language Processing (NLP) task where the goal was to develop a Convolutional Neural Net (CNN) for predicting personality traits (extroversion, agreeableness etc.) from written essays and compare how different activation functions influence prediction results.

## PROFESSIONAL EXPERIENCE

### Data Analyst | *International Maize and Wheat Improvement Center (CIMMYT)* (**Aug 2019 – Present**)

**Big Data Analytics for Climate-Smart Agriculture in South Asia (BigData2CSA) Project:**

Within this research project my responsibilities are:

- Data management.
- **Algorithm development** for data curation and imputation.
- Secondary **weather** and **remote sensing data** collection and stacking, feature engineering.
- Collaborate with cross-country research group for predictive modeling and **model inference**.

**Asia Regional Resilience to a Changing Climate (ARRCC) Research Programme:**

In this programme I am responsible for:

- Developing a Natural Language Processing enabled web-based tool that automatically harvests media reports on wheat rust disease occurrence and locations from the media in South Asia.
- Publishing a research paper regarding this novel method of media report data mining.

**Tailor-Made Training Plus (TMT+) for Bangladesh – An Orange Knowledge Programme:**

In this training program I have been assigned **as Teaching Assistant** in two of the following courses:

- Introduction to Scientific Programming
- Geospatial Data Analysis & Spatiotemporal Machine Learning with Python

**Cereal Systems Initiative for South Asia Mechanization Extension Activity (CSISA-MEA):**

**My assignment here** is to optimize a transportation network with the goal of finding the cost-effective, shortest route between source, destination.

### Engineer (Team Lead) | *edotco Bangladesh Co. Ltd.* **(Jul-2017 to Aug-2019)**

As a team lead my responsibilities were as follows:

- Manage a team of four (4) monitoring engineers and two (2) network transmission engineers.
- Analyse daily network traffic data along with power consumption data.
- Generate statistical summary reports of power to performance ratio.
- Generate internal reports on network and power usage performance to aid in the decision making.
- Generate stakeholders reports regarding network power consumptions and resource allocation.

### Engineer | *edotco Bangladesh Co. Ltd.* **(Aug-2015 to Jun-2017)**

My responsibilities as an Engineer were:

- Monitor telecom network of two major mobile network operators (GP & Robi) in Bangladesh.
- Provide countrywide remote network support on a roster basis.
- Summarize daily, bi-weekly network power usage reports.
- Development of multiple python scripts to automate multiple reports.

## LEADERSHIP/TEAMWORK EXPERIENCE

- More than two (2) years of professional experience of managing a group of six (6) engineers.
- Collaboration with multiple research groups; mentioned in the **"Professional Experience"** section.
- Worked as *Assistant General Secretary* of Electrical Association of KUET, during my undergrad.

## TEACHING EXPERIENCE

### Tailor-Made Training Plus (TMT+): Orange Knowledge Programme

This is a training programme in collaboration with the *Bangladesh Agricultural Research Institute (BARI), the Faculty Geo-Information and Earth Observation Science (ITC)* and *CIMMYT*.

There are four stages of this programme where each stage consists of multiple courses. Among these courses, I got to work as a teaching assistant in following two courses.

**Introduction to Scientific Programming** (*eqv. to 3 ECTS credits*)

- Basics of Python
- Algorithms
- Scientific Libraries
- Geocomputing

**Geospatial Data Analysis & Spatiotemporal Machine Learning with Python** (*eqv. to 3 ECTS credits*)

- Introduction to Geospatial data analysis
- Python Review
- Database
- Spatial Database
- Exploratory Data Analysis and Exploratory Spatial Data Analysis
- Introduction to Machine Learning
- Unsupervised Learning
- Decision Tree and Random Forest
- Artificial Neural Networks: Remote Sensing Image Classification

## TRAINING AND CERTIFICATIONS

Mar'20 **Deep Learning Specialization Series (5 Courses)** (Available online: Click here.)

1. Neural Networks and Deep Learning
2. Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
3. Structuring Machine Learning Projects
4. Convolutional Neural Networks
5. Sequence Models

Feb'20 **Food Security and Sustainability - Crop Production (**Available online: Click here.)

Oct'19 **Introduction to TensorFlow in Python (**Available online: Click here.)

Jun'19 **Introduction to SQL (**Available online: Click here.)

Jan'17 **Data Science Foundations Certified by IBM (**Available online: Click here.)

## AWARDS & ACKNOWLEDGEMENT

- District Runner-up in National Science Fair for building a Low-Cost Microscope in 2008.
- Divisional **Champion** in 3rd Bangladesh **Math Olympiad** in 2005.
- Hari Sankar Nayak et al. "Rice yield gaps and nitrogen-use efficiency in the Northwestern Indo-Gangetic Plains of India: Evidence based insights from heterogeneous farmers' practices" Field Crops Res., 275 (2022), Article 108328. Available online: Click here. (Acknowledgment)

## REFERENCES


1. **Dr. Timothy J. Krupnik**

   Country Representative for Research and Partnerships (CIMMYT / CGIAR)

   **CGIAR**

   Gulshan-2, Dhaka, Bangladesh

   **Contact:** +880-1755-568938

   **Email:** t.krupnik@cgiar.org

2. **Dr. Zia Ahmed**

   Research Associate Professor (Data & Visualization Scientist),

   Research and Education in Energy, Environment and Water (RENEW)

   **University at Buffalo, NY, USA.**

   **Contact:** 1-607-280-6502

   **Email:** zahmed2@buffalo.edu

3. **Md. Saeed Siddik**

   *Assistant Professor*

   **Institute of Information Technology (IIT)**

   **University of Dhaka, Bangladesh**

   **Email:** saeed.siddik@iit.du.ac.bd