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Date of birth: 26/04/1999   **Nationality:** Bangladeshi

EDUCATION AND TRAINING

[01/01/2017 – 25/06/2020] **Bachelor of Science (Electrical and Electronics Engineering)**

American International University Bangladesh (AIUB)   https://www.aiub.edu/

Address: 408/1, Kuratoli, , 1229, Dhaka, Bangladesh

PUBLICATIONS

[2021] **An Insight into Domestic Power Monitoring**

https://ieeexplore.ieee.org/abstract/document/9397925

A modern digital electric power monitoring system technique is proposed in this paper. Using an Arduino device as a microcontroller, it manages a single-phase electrical circuit to read the voltage and current values from the sensors. The calculated data would then be transmitted via the Wi-Fi transmitter to an Android application. As a microprocessor, an Arduino Nano is used to measure the results obtained from voltage and current sensors in the design and calculate the electricity, which is then transmitted through SP32 to an Android smartphone app. The Arduino Nano and SP32 are microcontrollers and wireless tools that are affordable. A latest Android application that uses open source Kodular tools to track voltage and current measurements. This facilitates the control of certain characteristics of basic voltage power efficiency

[2021]

A Convolutional Generative Model for short circuit fault protection of a microgrid system

https://ieeexplore.ieee.org/abstract/document/9641383

This paper aims to develop an intelligent protection scheme for microgrids with a number of distributed generation units considering different modes of operation. The conventional computational intelligence-based shunt fault detection and classification approaches have shallow architecture and involve a huge number of trainable parameters that restrains the effective feature extraction. In this work, a hierarchical generative model is developed that fuses the benefit of the convolutional operation and the weight sharing mechanism which improves the feature extraction process as well as reduces the trainable parameters. Also, the fault data in transmission line domain is limited. The proposed method can able to dig out the most efficient feature from the limited training dataset. The results presented in this study confirm the high performance of the proposed framework.

[2021]

Ancillary Voltage Control Design for Adaptive Tracking Performance of Microgrid Coupled With Industrial Loads

https://ieeexplore.ieee.org/abstract/document/9580826

Although the utilizing of renewable energy sources (RESs) in microgrid (MG) offers a recognized solution to meet the increasing demand, it's performance depend on various meteorological factors of RESs. Again, the functioning of MGs is often affected with certain industrial load dynamics which allowing them to alter the operating region and tracking function of the MGs. The above-mentioned challenges motivate us to design the ancillary voltage control design for enabling the MGs to provide adaptive transient and tracking voltage responses over the changes of various factors like weather, consumer demand, and industrial loads. Firstly, we design an intelligent adaptive control (IAC) framework made by merging with proportional-integral (PI) regulator and artificial neural network (ANN) to sustain the regulated common bus voltage over the mentioned changes. The regulated bus voltage is forwarded to operate the industrial loads via the regulation of inverter-based secondary network (SN). A study on the variation of weather condition and consumer demand is done to show the efficacy of the IAC framework. Secondly, we propose a novel fixed control structure named model reference modified fractional-order PID (MR-F0PID) regulator to maintain the high tracking response of the MG via the control of inverter associated with the SNs. The tracking competency of this fixed control framework is analyzed over the running of a few industrial loads dynamics associated with single-phase inverter based SN and results are compared with the other related existing controllers. Moreover, a mathematical analysis for mapping the stable region is completed here to track down the closed-loop stability area. As a further study, the three-phase inverter based SN associated with several three-phase industrial load is also considered with the same DC bus and analyzed to observe the competency of the proposed fixed MR-FOPID control framework

[2021] ### Robust Short-Circuit Fault Analysis Scheme for Overhead Transmission Line

https://ieeexplore.ieee.org/abstract/document/9829558

This paper introduces a novel architecture for anomaly detection and classification of high-voltage transmission line using the self-attention convolutional neural network enhanced with wavelet-transform (WSAT-CNN). The transmission lines repeatedly face an aggregation of short circuit-faults and their impact in the real time system increases the vulnerability, damage in load, and line restoration cost. In this paper, we propose a WSAT-CNN model for enhanced noise immunity and to pay more attention to the fault features. The studied scheme consists of number of layer with self attention mechanism that allows the model to recognize the fault more accurately. The resilience of the presented framework is validated by reckoning the noises to the input data. The results indicate that the proposed approach is capable of accurately classifying and detecting faults in transmission line with high precision.

[2021]

An intelligent short-circuit fault classification scheme for power transmission line

https://ieeexplore.ieee.org/abstract/document/9528200

This paper focuses on presenting a novel fault detection and classification (FDC) scheme that can classify shut faults occur in overhead transmission lines with a very promising performance. Immediate diagnosis of TL faults is important to avoid power system damage. Several fault detection and classification (FDC) systems have been developed to provide a reliable solution to this problem but huge computation time, noisy data, fault inception-angle and fault resistance variation effect made those systems less acceptable. In this paper, we focus mostly on increasing the performance of the scheme while overcoming the above mentioned challenges providing more focus on the reduction of computational complexity. Consequently, an optimization algorithm is integrated with the FDC system that makes analyzing training data less complex thus saving huge amount of time. Furthermore, wavelet aided signal processing technique is used to extract only

useful information from the signal eliminating noise profiles. The reliability of the proposed scheme is verified by performing the FDC operation on a real-time power system simulation.

[2021]

An Unsupervised Protection Scheme for Overhead Transmission Line with Emphasis on Situations During Line and Source Parameter Variation

https://ieeexplore.ieee.org/abstract/document/9331170

Quick removal of the short circuit faults in a power transmission and distribution system solely depends on an accurate characterization of them. Characterization of short circuit fault demands continuous monitoring of the electrical signals residing with the power transmission lines that change with the operating conditions. Taking the deficiencies as a research challenge, this paper introduces an unsupervised learning framework for fault detection and classification (FDC) based on the capsule neural network. The proposed framework learns from the unlabeled dataset and captures more extra target-oriented attributes. The Gramian angular field (GAF) image representations of the sampled signals are fed as input to the proposed model. The performance of the proposed method is verified in terms of errors due to the source and line parameters variation. Furthermore, to acquire more intuitive insight, a comparison analysis among the existing commensurate methods and the proposed architecture is carried out. The results found from the verification indicates that the proposed method has the ability to provide more than 99% classification accuracy.

WORK EXPERIENCE

[16/08/2021 – Current] **Manufacturing systems engineer**

Walton Digi-Tech Industries Limited

City: Gazipur
Country: Bangladesh
Main activities and responsibilities:
Assist Operations Value Stream for process preparation, production support, and product quality. Leading a big team with 25 team members and Collaborating with the management. Direct Six Sigma as well as Lean Principle on basis of RCCA activities. Perform with vendors and internal as well as external customers to prepare processes conforming to product parameters. Attain targets for process productivity, manufacturing days, process yield, and entire manufacturing expenses. Ensure to improve different III-V wafer Fab processes for improvement and manufacturability. Preparing SOP for the production of all products with the cooperation of the Core R & D Team, Making different jigs for the Production floor, Making different prototypes for manufacturing new Products, and doing all types of work related to process development for the support of production, Preparing different reports regarding the Process Development of new products.

[08/03/2021 – 04/08/2021] **Production and electric power engineer**

Banco Energy Generation Ltd

City: Munshiganj
Country: Bangladesh
Main activities and responsibilities:
Handle generators, auxiliary pumping equipment, and power plant devices to connect or disconnect the equipment from circuits. Interact with systems operations to coordinate transmission loads, frequencies and line voltages. Oversee and check power plant equipment to determine operating problems evidence. Check and test electrical power distribution machinery and equipment with testing devices. Conduct equipment maintenance and Support boilers and equipment startup and shutdown. Match phase, frequency and voltage electricity supplied to panels by controlling generator output. Engage in educational training and safety programs. Handle control room operator

backfill. Document and compile operational data, complete and maintain forms, logs and reports.

LANGUAGE SKILLS

Mother tongue(s): Bengali

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B2

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

NETWORKS AND MEM-BERSHIPS

[01/01/2019 – Current] **IEEE General member**   Bangladesh

CONFERENCES AND SEMINARS

[10/01/2019 – 12/01/2019]

1st International Conference on Robotics, Electrical and Signal Processing Techniques

Dhaka, Bangladesh

Department of Computer Engineering (CoE) and Department of Electrical & Electronic Engineering (EEE) from Faculty of Engineering of American International University-Bangladesh (AIUB) organized the 1st International Conference on Robotics, Electrical and Signal Processing Techniques (1st ICREST) on 10–12 January 2019 in its campus. The three-day conference featured several keynote speakers and other distinguished guests. 10 keynote speeches were presented by world renounced researched from home and abroad on subjects as diverse as, Power, Renewable Energy, Nanotechnology, Telemedicine, and others. Nearly 20 academic sessions with 134 papers were presented, authored by nearly 500 researchers coming from 13 different countries (Australia, Canada, Germany, Italy, Japan, Pakistan, Qatar, South Korea, Thailand, UK, USA, and Vietnam) including Bangladesh. These panel sessions were designed to elicit maximum debate and conversations between the audience and the experts on the panel. In addition, three-day long workshops, project exhibition, poster competition were organized during this vibrant conference.

https://icrest.aiub.edu/

[05/01/2021 – 07/01/2021]

2nd International Conference on Robotics, Electrical and Signal Processing Techniques

Dhaka ,Bangladesh

The Faculty of Engineering, American International University-Bangladesh (AIUB), Dhaka with technical sponsorship from the IEEE Bangladesh Section will be organizing the 2nd International Conference on Robotics, Electrical and Signal Processing Techniques 2021 (2nd ICREST) from 5-7 January 2021. The aim of 2nd ICREST is to encourage and interact young researchers with the academic and industrial leaders to recognize the forthcoming penstock. Hence, 2nd ICREST is looking for the innovative research and ideas on the emerging developments in Computer, Electrical and Electronics, Quantum Computing, Machine and Deep Learning, Artificial Intelligence and Robotic Technologies. This

platform may be a unique opportunity to develop future direction from Science and Engineering Professionals.

https://icrest.aiub.edu/

VOLUNTEERING

[01/01/2018 – 01/12/2021] **AIUB Community of Engineering Students (ACES)**   Dhaka Bangladesh

AIUB Community of Engineering Students (ACES) envisions to be a professional student organization offering welfare and services for engineering students and help the community both academically and skillfully. ACES began its journey from 4th April 2014, after getting approval from Office of Student Affairs (OSA), AIUB at 4th December 2013. ACES mainly focuses on activities that will help the engineering community grow by working to expand engineering awareness through its programs and events, facilitate the professional advancement of all engineering students, develop the quality of life of disadvantaged communities through implementation of environmentally and economically sustainable engineering projects, and creating transformative experiences and responsible leaders. ACES has always put effort to build connections between the university and industries, provide opportunities for its members to make contributions to their local and global communities, honor outstanding engineering students who have excelled in character, leadership and volunteer activities and conduct events that will benefit the engineering students to build better and sustainable future for themselves and the society.

DIGITAL SKILLS

Digital Skills - Test Results

🗐 Information and data literacy	**INTERMEDIATE**	Level 4 / 6
🖧 Communication and collaboration	**INTERMEDIATE**	Level 3 / 6
◎ Digital content creation	**INTERMEDIATE**	Level 3 / 6
🖏 Safety	**FOUNDATION**	Level 2 / 6
🖥 Problem solving	**INTERMEDIATE**	Level 4 / 6

Results from <u>self-assessment</u> *based on* <u>The Digital Competence Framework 2.1</u>

My Digital Skills

Good familiarity with MATLAB, Simulink | Microsoft Office, Microsoft Word, Microsoft Excel, Outlook, Facebook, Google