

Curriculum Vitae

Personal Data

Name Abu Shad Ahammed
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GitHub <https://github.com/ShadAhammed>



EDUCATION

09/2018 **MSc. – University of Bremen, Germany**
Control Microsystem and Microelectronics(CMM)
Thesis- FPGA prototype of a Support Vector Machine for medical application

02/2009 **BSc. – Military Institute of Science and Technology(MIST), Bangladesh**
Electrical Electronics and Communication Engineering
Thesis – Weather dependent predictive model for electrical load forecasting

TECHNICAL AND COMPUTER SKILLS

Programming Language MATLAB, VHDL, Python
ML Algorithm Kernel, Regression, Neural Network, Ensemble
ML Framework Scikit Learn, Pytorch, Tensorflow/Keras
ML Libraries NumPy, Panda, Seaborn, SciPy
Data Structure SQL
Hardware FPGA (Device: Altera, Xilinx PYNQ), Arduino, Raspberry Pi, Microcontroller
Documentation Microsoft Office, LaTeX

Research EXPERIENCE

07/2021 - **Chair for Embedded Systems, University of Siegen**
Research Associate and PhD Candidate
Topic: AI-based predictive model to recognize rescue situations and provide treatments

- Application of Artificial Intelligence (AI) in predictive analysis
- Development of FPGA/Arduino based embedded system running AI
- Writing scientific projects, technical documents in the field of Embedded AI
- Working with hardware accelerators like TVM-VTA, TinyML platform
- Creating AI based projects – KIRETT, LIFETIME, HARS, IRIS, CareEpi, MAPS
- Supervision of students (4 master thesis, 1 bachelor thesis, 4 master projects, currently 2 PhD students as co-supervisor)

12/2017 - 09/2018 **Institute of theoretical electrical engineering and microelectronics**
Master Candidate

- Designed Python based machine learning model for detecting epileptic seizure with accuracy over 98%
- Creating test environment of SVM mathematical model in MATLAB

- Modelling hardware prototype with FPGA using VHDL without time slack
- Designing test bench for verification of test cases and debug with ModelSim

06/2017 – 10/2018

Institute of Materials Engineering

Student Research Assistant, Process Engineering

- Exploratory data analysis of droplets' rainbow pattern with Fortran and MATLAB
- Linear and non-linear optimization of protein droplet's scattering data
- Droplet size and complex refractive index measurement with image processing

03/2017 - 08/2017

Institute of Micro sensors, Actuators and Systems

Student Research Assistant, Project ReDynForce

- Obtaining data from inertial measurement unit via a wireless sensor network
- Analysis of time-series sensor's data obtained using MATLAB/ Octave
- Electronics equipment design and implementation using Raspberry Pi

Work EXPERIENCE

09/2019 – 12/2020

DIEHL Aerospace GmbH

Test System Engineer, Research and Development

- Acceptance Test Specifications for Integrated Modular Avionics (IMA)
- Developed general purpose automatic test equipment to perform Production acceptance tests for aerospace equipment
- Defined system requirements to test wired (Discrete/Analog/PWM) and BUS communication (CAN/A429/A664/A717) interfaces

11/2018 - 05/2019

MOEWE Optical Solutions GmbH

Electronic Developer

- Test and verification of high-speed sensors and integrate with MCU
- Developed embedded systems prototype to measure high speed current
- Designed PCB using Eagle/Target3001/PSPICE

PUBLICATIONS

Journal: Zaman, Sojib Bin, et al. "Contexts and opportunities of e-health technology in medical care." *Journal of Medical Research and Innovation* 1.2 (2017): AV1-AV4.

Journal: Ahammed, A.S.; Ezekiel, A.M.; Obermaisser, R. Time-Efficient Identification Procedure for Neurological Complications of Rescue Patients in an Emergency Scenario Using Hardware-Accelerated Artificial Intelligence Models. *Algorithms* 2023, 16, 258. <https://doi.org/10.3390/a16050258>

Conference Paper: Zenkert, Johannes, et al. "Kirett-a wearable device to support rescue operations using artificial intelligence to improve first aid." *2022 IEEE International Smart Cities Conference (ISC2)*. IEEE, 2022.

Conference Paper: Zenkert, Johannes, et al. "Kirett-a wearable device to support rescue operations using artificial intelligence to improve first aid." *2022 IEEE International Smart Cities Conference (ISC2)*. IEEE, 2022.

Conference Paper: Ahammed, Abu Shad, Sampada Reddy Donthireddy, and Roman Obermaisser. "Detection of respiratory emergency situation of rescue patients with machine learning algorithms." *IECON 2022–48th Annual Conference of the IEEE Industrial Electronics Society*. IEEE, 2022.

LANGUAGE SKILLS

- English : Fluent; Level C2
- German : Intermediate; Level B2