Muhammad K. Hamdan

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EDUCATION: **Iowa State University (ISU), Ames, Iowa, U.S.A**

Ph.D. in Electrical Engineering & Computer Engineering — Anticipated – Spring 2020

"Material Characterization and Quantification in Images using Machine Learning Techniques"

Master in Electrical Engineering & Computer Engineering — Dec 2017

"Hardware Acceleration of Machine Learning Algorithms and VHDL Auto-Generation"

North Dakota State University (NDSU), Fargo, North Dakota, U.S.A — 2012-2013

IUG, Gaza, Palestine (Bachelor in Electrical Engineering) — Feb 2015

SKILLS

PROFESSIONAL SKILLS

- Steep learning curve, creativity, adaptability, responsibility, perseverance, and motivation
- Ability to lead and train a diverse group of trainees, teamwork, and time management skills

COMPUTER & TECHNICAL SKILLS

- Professional working knowledge with MS Word, Excel, Power Point, Visio, and familiar with MS Project
- Program in Python, LabVIEW, MATLAB, C, Java, Veri/VHDL, C++, C#, G-code & Android
- Machine learning frameworks: TensorFlow, Keras, Scikits-learn
- Simulation and Design: EAGLE, ModelSim, RTL, Circuit-maker, Altium design, MasterCam & Simulink
- JMP, SolidWorks Electrical, AutoCAD, P.S, Ulead Video Studio, Camtasia, Acoustica-Mixcraft, and Prezi
- Ability to handle and deal with any program/platform (Web, Apps, Utilities, Accessories)
- Standards and Protocols: IEC61131-3, RS485, RS232, Bluetooth, SAE J1939, CAN, USB, and Ethernet
- Industrial networking, CNC Machining, drilling, electrical wiring, PCB design and printing, circuit design, oscilloscope operation, and systems troubleshooting
- Special Controllers: KUKA (LBR_iiwa_14_R820), PLCs, NI-CDAQ, NI-CRIO, Micro-controllers in general, Keyence Laser, Controllino Mega, Radar controllers.

WORK EXPERIENCE

BioCentury Research Farm Ames – Iowa State University, IA, United States — Jan 2017- Present

Position: Machine Learning Researcher and Algorithm Design Engineer

- Developed semi-supervised algorithm that predict & quantify a physical property of material from images
- Developed custom design and application centric DNN architectures
- Processed and analyzed image-based datasets and other tabular datasets
- Managed big data of ~ 0.5PB, performed data transformations, feature engineering, and data fusion
- wrote scripts to:
    - Automatically fuse and analyze multiple reference ground-truth sheets into a single one that includes data of interest without any redundancy in an organized fashion.
    - Extract data from encoded files and parse these files in an automated fashion to fill up missing data points in the ground-truth sheets (e.g. identifying crop type through image analysis, etc)
- Design vision systems and machine learning algorithms to perform tasks such as object tracking and classification, and quantity estimation.
- Develop unsupervised methods to quantify and characterize materials using vision systems

Position: DAQ and Management Specialist, Instrumentation and Automation Engineer

- Designed and implemented NI-DAQ systems to acquire/log massive volumes of data (~ 42MB/s)
- Designed and implemented LabVIEW based user friendly graphical user interfaces.
- Designed and instrumented automation systems incorporated various sensors (Acoustics, Accelerometers, Laser, Temp and Ultrasonic-CAN based, Pressure, Contamination-RS485 based, Speed, Thermocouples)
- Implemented different communication schemes (wired, wireless) and communication protos
- Designed and implemented cellular and email-based alert and reporting system as well as system handler to perform automatic system update, data transformation, and reporting at certain time daily.
- Wrote Matlab and python scripts for data manipulation, transfer and cold storage

AknanTech for Integrated Technical Solutions — 2014 – 2016

Position: Automation and Process Engineer, and Research Member

Project I: Biogas, Compost and Hydroponic

- Monitored and operated a biogas unit, in-vessel composter and supervised a group of Jr. engineers
- Managed the electrical sector and appliances (HR, PCs, printers, equipment, network and online pages)
- Designed and implemented a SCADA System (**~1300 work hours**)
- Integrated various types of sensors and actuators with PLCs
- Programmed, operated and connected VFDs with 3-phase AC motors
- Designed electrical schematics and layouts and electrical instruments to perform engineering tasks
- Prepared product documentation, BOMs, reports, presentations and performed research tasks

Project II: Solar Power Systems Design Engineer

- Sized various off-grid systems with different capacities (Small, and mid-scale – 10k-1M$)
- Site evaluation and preliminary design, cost estimation, and bill of materials design
- Prepared solar power system specification sheets for tendering
- Delivered courses in solar power systems (Sizing, Design and Analysis)

Project III: Wireless station for geothermal mapping ~650 work hours

- Designed electrical schematics for the system and achieved communication through WiMAX technology
- Designed and programmed a friendly user-interface for data acquisition and station monitoring-SCADA
- Designed a complete installation protocol and successfully installed the unit

Capital Enterprise 2015 – 2016

Position: Control Systems Engineer

- Designed an electrical operational plan for a mall (Largest mall in the Gaza Strip)
- Designed various electrical cabinets and subcabinets with proper specifications
- Designed a SCADA system for the mall
- Operated, and maintained a 300-sq. ft. NovaLCT-Mars led screen (Electrical wiring – SW/HW Config.)
- Designed an operational plan for 4 Generators (50,200,400,600KVA) to monitor and operate these generators to provide the mall with electricity effectively and reliably
- On site supervision, control room design, BOM, shop-drawings, and IP cameras operation

North Dakota State University Jan 2013- May 2013

Position: Undergraduate Research Assistant

- Fulfilled office, administrative and logistical assistance
- Delivered presentations and made GUI design on MATLAB
- Performed literature reviews to determine how students in power engineering learn

Junior Engineer at the Research & Projects Center of IUG 2013 - 2015

- Designed PCB layouts, embedded based systems and controller-circuits
- Operated the center's CNC machine and programed on different platforms

LEADERSHIP AND INVOLVMENT

UK-Government's Sirius Program

- **Event management**: I managed to organize a presentation and negotiated a venue (free of charge)
- **Marketing:** Attracted the audience that Sirius program targets through professional marketing skills
- **Vice-President of the Arab Students Association at NDSU**
- **Leader Quest leadership program:** Enhanced the capability for critical thinking, self-analysis and reflection

VOLUNTARY WORK

- **Great Plains Food Bank:** Helped in verity of food packing works
- **UNRWA Summer Games**: Efficiently handled games and helped in carnival activities

HONORS/AWARDS

i. Fulbright Scholar
ii. A Scholarship, NESA, U.S Consulate General Jerusalem
iii. Dean List's Honorable Mentions

LANGUAGE FLUENCY

● English ● Arabic ●Spanish "Beginner"