Alia **Morsi**

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Education

The American University in Cairo (AUC)   *Cairo, EG*
BS in Computer Science - GPA: 3.98   *Fall 2013*

Experience

KarmSolar   *Cairo, EG*
Software Development Engineer (SDE2)   *April 2016 – July 2017*
- Worked in a small team (2-4 developers) in high capacity >45 KW Solar Water Pumping (SWP) applications
- Planned, designed, and implemented SWP proof of concept tests for new ideas, code refactors, and bug fixes for installations
- Created the system architecture for some of the team's projects
- Defined necessary interfaces for projects: IO wires (Digital/Analog), RS-485 (protocol payloads) and Web Services
- Led the deployment and testing for code updates to installations, through small scale test setup and high capacity site tests

KarmSolar   *Cairo, EG*
SDE 1   *July 2013 – April 2016*
- Developed applications to manage our SWP installations on Off-Grid farms (Note Syncing and Well Monitoring)
- Set up department procedures to accommodate for the growing team, for better resource sharing & source control management (VPN setup, git access, email)
- Developed an understanding of photovoltaic power electronics necessary for work in SWP control

Projects

Porting SWP control from LabView to C++ to run on STM boards
– For our SWP system to run on a wide range of hardware rather than only NI Compact RIOs (cRIO), it became necessary to port our codebase from LabView to C++. Project included re-architecting the system due to the fundamental differences between LabView and C++. Not being tied to cRIO meant a cheaper pumping system, and moving from C++ to LabView resulted in a better designed system that is more maintainable and readable.

Hybrid SWP drive: Load Sharing between 2 sources
– To run a constant speed load with solar power using Maximum Power Point Tracking (MPPT), another source (Generator) is coupled to the solar DC bus. Control ensures maximum power is supplied from the solar source. It is a variation of our initial SWP solution's finite state machine

Off Grid Sensor Network infrastructure with Arduino based nodes
– The idea is to wirelessly aggregate sensor readings to an on-site server. For the primary version of the system, sensor nodes were developed using Arduinos and a custom shield that provides multiple sensor interfaces (current, voltage, and RS-485) and wireless connectivity

Initial Version of Patent Winning Variable Speed SWP control on cRIO devices using Fuzzy Logic
– Project involved the design and development of the system's finite state machine (FSM) deployed on ~30 solar wells to date

Publications

2015   **Patent**, Teirelbar, Ahmed and Morsi, Alia. System and method for maintaining a photovoltaic power source at a maximum power point. US 14/738, 113, filed June 12, 2015

2013   **Short Paper Publication**, A. Morsi and A. Rafea, "Studying the impact of various features on the performance of Conditional Random Field-based Arabic Named Entity Recognition," 2013 ACS International Conference on Computer Systems and Applications (AICCSA), Ifrane, 2013, pp. 1-5.

Skills

Programming Languages: Proficient: C++ and LabView. Familiar with: Python, Java, and JavaScript
Tools: Source Control: Git, Bug Tracking: Bugzilla

Honors & Awards

March 2017   **1st Place at Alexa Hackathon in AUC**, Prototyped a facebook linked Alexa Skill that manages your events
2013   **Dean's List Status**, Bachelor's Degree