Ahmed Harbi *Embedded Software Engineer*

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🛡 Exempt   ⦾ Single   🚩 Egyptian   in LinkedIn   GitHub   Ⓗ HackerRank   LeetCode

PROFILE

Software engineer with experience in embedded software development. Proficient in C, C++, and Python. Extensive experience in developing firmware for complex electronics and vehicles. Excellent understanding of Git, build management, and version control.

EDUCATION

Sep 2016 – Jul 2021
Ismailia, Egypt

B.Sc. in Communication and Electronics Engineering, *Faculty of Engineering, Suez Canal University*
- CGPA 2.24 / 4.00 *(Good)*
- Coursework: Communication systems, Electronics, Waves, Satellite communication, Networks, and Neural Networks.
- Graduation Project: Pharmacy Smart System: Designed and implemented a deep learning-based software to detect and recognize handwritten medical prescriptions. *(GPA: 4.00 / 4.00 (A))*

PROFESSIONAL EXPERIENCE

Jul 2019 – Jul 2019
Cairo, Egypt

IBM, *Artificial Intelligence Analyst Trainee*
- Building Chatbots using IBM Cloud.
- Working with IBM Watson Assistant to increase the intelligence of the chatbots.

CERTIFICATES

ISTQB Foundation Level
CTFL

Deep Learning Specialization ↗
DeepLearning.AI via Coursera

Introduction to Embedded Systems Software & Development Environment ↗
University of Colorado via Coursera

Red Hat Certified System Administrator
RHCSA

Machine Learning Nanodegree ↗
Udacity

Artificial Intelligence Analyst - Mastery Award ↗
IBM

Embedded Systems: Shape The World
Edx

Mathematics for Machine Learning ↗
Imperial College London via Coursera

SKILLS

Programming Languages
- *C / Embedded C*
- *C++*
- *Java*
- *Assembly*
- *MATLAB*

Microcontrollers
- *AVR ATmega32*
- *TIVA-C TM4C123G*
- *STM32F103x*
- *Raspberry Pi*
- *Arduino*

Simulation and analysis tools
- *Simulink*
- *LabView*
- *Proteus*
- *KiCad*
- *Multisim*
- *Cadence Virtuoso*

Scripting Languages
- *Python*
- *Shell (Bash)*

IDEs
- *Visual Studio Code*
- *Code Blocks*
- *Code Composer Studio*
- *Keil uVision*
- *MPLabX*
- *Microchip Studio*
- *PyCharm*

Communication Protocols
- *UART*
- *SPI*
- *I2C*
- *LIN*
- *CAN*
- *USB*

Software Engineering practices and tools
- *Git*
- *Firebase*
- *Linux/Unix*
- *Docker*
- *Jira*

Industrial Skills
- *Microcontroller Architecture*
- *Real-Time Operating Systems*
- *Embedded Systems Testing*
- *Embedded Linux (Yocto)*
- *Device Drivers*
- *PCB Fabrication and Datasheet Understanding*
- *AUTOSAR architecture*
- *MISRA C Rules*

Knowledge
- *Linear Algebra*
- *Statistics*
- *Calculus*
- *Digital Signal Processing*
- *Image Processing*
- *Video Processing*
- *Algorithms and Data Structures*
- *Machine Learning Algorithms*
- *Deep Learning Algorithms*
- *Computer Vision Algorithms*

Machine Learning Frameworks
- *TensorFlow*
- *Keras*
- *Scikit-Learn*

PROJECTS

Jun 2020 – Jul 2021 **Prescription-HTR,** *Graduation Project Role*
Handwritten text recognition system designed to detect and recognize drug names out of Egyptian medical prescriptions based on CRNN model, trained on IAM English Handwritten Words Dataset, followed by CTC decoding algorithm and a language model for spell correction. *(Python, OpenCV, TensorFlow, Editdistance).*

Mar 2021 – Jun 2021 **Channel Coding Simulation**
Simulating Channel Coding techniques Linear and cyclic Block Coding, Convolutional coding, and LDPC. *(Matlab)*

Sep 2020 – Jan 2021 **Digital Modulation Simulation**
Designing and Simulating Digital Modulation Types ASK, FSK, PSK, M-ary PSK, QAM, M-ary QAM. *(LabView)*

Sep 2020 – Jan 2021 **IEEE 802.11a WLAN Model**
IEEE 802.11a WLAN physical layer model simulation, with a demonstration of adaptive modulation and coding. *(Matlab)*

Sep 2019 – Jan 2020 **Butterworth Bandpass Filter**
Designing and simulating Passive Butterworth Bandpass Filter. *(Multisim)*

Jul 2018 – Aug 2018 **Morse Code by Arduino**
Arduino transmitter which converts English words into Morse Code then represents it in light and sound form with laser and buzzer, Arduino receives words through serial Bluetooth communication. Designed an android mobile application, and desktop application to communicate with Arduino, also implemented OCR to detect digital or printed English words then send them to Arduino. *(Python, C++, OpenCV, Pytesseract, PySerial, PyQt).*

Jan 2017 – Feb 2017 **ROV Image Processing**
Image Processing system designed to detect shapes of triangles and rectangles underwater, detect colors of red, yellow and blue, and OCR model to detect printed tag of a drowned airplane to assist ROV identifying the airplane. *(Python, OpenCV, Pytesseract).*

COURSES

Dec 2021 – Jun 2022 **Embedded Systems Diploma**

The Complete C Programming Bootcamp, *Udemy*

Mastering Data Structures and Algorithms with C and C++, *Udemy*

VOLUNTEERING

Aug 2019 – Oct 2019 **NASA Space Apps Cairo,** *Technical Support Specialist*

Sep 2018 – Sep 2019 **IEEE Suez Canal University Student Branch,** *Chairman*

Feb 2018 – Apr 2019 **MATE Arab Regional ROV Competition,** *Safety Judge*

Dec 2017 – Apr 2019 **Fab Lab Ismailia,** *Makers Hunter*

Aug 2018 – Jan 2019 **IEEEmadC,** *Student Ambassador*

Jun 2018 – Jan 2019 **IBM Digital Nation Africa,** *Student Ambassador*

Aug 2018 – Oct 2018 **NASA Space Apps Ismailia,** *Technical Lead*

Jun 2017 – Sep 2018 **IEEE Suez Canal University Student Branch,** *Technical Member*

Jul 2017 – Aug 2018 **SCU Racing Team,** *Technical Member*

LANGUAGES

- Arabic
- English