



Omar A. Alsherbini

Back-End Developers Team Lead at AAK Tele-Science

📍 [Bologna, Italy](#)

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Summary

Adventurous & devoted electronics engineer with FPGA, ASIC & MEMS design & simulation expertise, backed up with advanced microfabrication & solid-state devices simulation experience. Projects man with passion towards interdisciplinary projects who loves to utilize programming to automate design methodologies. Top-rated freelancer on Upwork with 2 scientific publications & numerous projects.

Education

- **09/2019 – Present** – MSc Student Electronic Technologies for Big Data & IoT – University of Bologna. **With Italian Ministry of Foreign Affairs (MAECI) Full Scholarship.**
- **09/2013 – 06/2018** – BSc Nanotechnology & Nanoelectronics Engineering – University of Science & Technology at Zewail City. **With Zewail City Full Scholarship – GPA 3.685 with Honor Degree.**

Work Experiences & Achievements

- **10/2020 – Present: Back-End Developers Team Lead at AAK Tele-Science (Part-Time).**
 - Remotely working on the California-based startup's new website and leading the back-end team to create and use APIs to connect to online platforms and implement AI algorithms for business modeling.
- **04/2018 – Present: Upwork Top-Rated Engineering Freelancer ([Profile Link](#)).**
 - Spartan 7 FPGA implementation of an Image Sequencer module with SPI MOSI communication protocol for IOS200 Python RGBD Image Sensor.
 - EDA tool to calculate critical path of a netlist using CPM & C++ framework from CADathlon 2005.
 - RISC-V RocketChip documentation using Scala framework Chisel, in cooperation with Intensivate.
 - VGA Controller on DE1-SoC FPGA.
 - Ring Antenna simulation on CST and COMSOL MultiPhysics.
 - Simulation of FinFET and power MOSFET using Sentaurus Sdevice.
- **09/2018 – 01/2019: Teaching & Research Assistant at Zewail City of Science and Technology.**
 - Delivered Physical Design & EDA Algorithms course labs and supervised and assessed its project to implement an EDA tool using C++ to calculate minimum clock period from a netlist file and a mini technology library.
 - Taught Computer Architecture course students SystemVerilog from scratch, assisted in SystemVerilog lab delivery and supervised and assessed full single cycle, multi cycle & pipelined ARM processor HDL projects.
 - Researched the feasibility of implementing MEMS devices to strengthen a weak heart for the RA position.
- **09/2015 – 01/2016 & 09/2017 – 01/2018: Junior Teaching Assistant at Zewail City.**
 - Gave a workshop in MEMS+ and Coventorware for MEMS Design & Fabrication – Optical MEMS courses.
 - Participated in Physics III course tutorial delivery while still a 3rd year undergrad in a 5 years BSc degree.
- **07/2017 – 09/2017: Intern at Mentor Graphics (BSc Graduation Project & 2 Publications).**
 - **BSc Graduation Thesis:** ASIC Implementation of Energy-Optimized Successive Cancellation Polar Decoders for Internet of Things (Published in ICM 2018 – First Author).
 - Worked with C++ framework FMI for simulation tools co-simulation, Perl and DDR4 micro-architecture.
 - Internet of Things: A Comparative Study (Published in IEEE CCWC 2018 – Equal Co-Authors).
- **07/2016 – 09/2016: Custom Digital Design Intern at Center of Nanoelectronics and Devices (CND), The American University in Cairo (AUC).**
 - Created UMC 130 nm standard cells on Cadence Virtuoso for asynchronous sequential digital circuits.
- **01/2017 – Present: Other projects (BSc & MSc Related).**
 - **MSc Project:** RISC-V architecture modification for bit manipulation instructions, in cooperation with ETH Zurich and University of Bologna.
 - Intel Cyclone 10 LP FPGA emulation on Quartus Prime of a sequential large shift barrel shifter, 400 MHz.
 - ASIC implementation of MIPS processor, FFT core and Vedic Multiplier.
 - Full custom design and layout of 32-Bit adder and Finite State Machine on Mentor Graphics.



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- Novel MEMS Micro-Object Levitator/Accelerator and its driving electronic circuit for various potential applications including improved imaging and characterization techniques. Simulated using MATLAB, Coventorware, SystemVerilog, VerilogA & Cadence Virtuoso (**Head of Project**).
 - MEMS Design Contest 2018 Semi-Finalist Candidate, hosted by Coventor, Cadence & XFAB.
 - Invited to participate in CDNLive EMEA 2017 poster session in Munich, Germany.
- Simulation and layout of analog Op Amps and RF LNA on Cadence Virtuoso.
- Fabrication of FinFET simulation on SProcess.
- Ball & Plate control project utilizing C++ framework OpenCV for image processing of ball position recognition.
- Mini self-driving car (automatic and manual line follower and obstacle avoidance using smart phones).
- C++ Windows Desktop app to implement a [short memory test](#) using Visual Studio WPF and XAML for GUI.
- Zewail City Science Festival's 2015 & 2016 official websites development.
- Initiated & supervised Microsoft Tech Club Zewail City 2015 C# competition.

Skills

Engineering Skills:

Design Skills:

- Computer Architecture & Assembly: RISC-V, RocketChip & ARM.
- FPGA, ASIC, full custom digital design, analog & RF electronics.
- Microfabrication, MEMS design & microfluidics.
- VLSI & MEMS layout.
- Embedded Systems & Control: Arduino & Raspberry.

Simulation Tools:

- ASIC & FPGA: Synopsys DC Compiler – Cadence SoC Encounter – Quartus Prime – Xilinx Vivado.
- RTL: Chisel – VHDL/Verilog/SystemVerilog – Verification & Generic Test Benches.
- Circuits Level: Cadence Virtuoso – Mentor Graphics – Proteus – LTSpice.
- Multiphysics: Coventorware & MEMS+ – COMSOL Multiphysics.
- Devices: VerilogA – Sentaurus SProcess – Sentaurus SDE – Sentaurus Sdevices.
- Electromagnetism & Waveguides: Computer Simulation Technology (CST) – Lumerical.
- Computational tools: MATLAB – Wolfram Mathematica.

Programming & Digital Skills:

- C/C++, Python, Linux, Scala, C#, MATLAB, PHP, JavaScript & MySQL.
- Image processing using OpenCV, web development & Windows apps development.
- Data Security.
- Photoshop, video editing, Microsoft Office, Microsoft Excel.

Cleanroom Experience for Microfabrication Techniques

Soft Skills: Good presentation, video tutoring, communication, teamwork, team & time management, rapid self-learning and working under pressure skills.

Student Activities & Volunteering

- **10/2016 – 02/2017 – 10/2017:** Academic Committee member – Head at Zewail City Nano-Tech Club.
- **04/2016 – 09/2016:** IT Committee Vice Head at Zewail City Science Festival 2016.
- **05/2015 – 09/2015:** IT Committee member at Zewail City Science Festival 2015.
- **02/2015 – 07/2015 – 07/2016:** Organizer – President at Philosophy Club ZC.
- **10/2014 – 06/2015:** Academic Arm Head at Microsoft Tech Club – Zewail City.
- **02/2014 – 05/2014:** Active member at Codex Programming Club ZC.