**Muhammad Aldacher**  
San Jose, CA 95110  
+1-347-210-7821 ● muhammadisaaldacher@gmail.com

**OBJECTIVE**

Passionate hardware engineer looking for a challenging opportunity, where I can apply my three years of lab & system-level experience, along with test automation & software skills to develop test plans for revolutionary chip products.

**EDUCATION**

**San Jose State University,** San Jose, CA

M.S., Electrical Engineering, **Current GPA 4/4** Aug 2016 – Present

*Coursework*: Analog Integrated Circuits, RF Integrated Circuit Design I, Digital Design with FPGAs,High speed CMOS design,  
 Data Conversions in AMS ICs, RF Integrated Circuit Design II

**Alexandria University, Faculty of Engineering**, Alexandria, Egypt

B.S., Electrical Engineering, Electronics Major, **GPA 3.96/4** Sep 2008 – Jun 2013  
 Distinction with degree of honor & Rank in the top ten.

**WORK EXPERIENCE**

**Xilinx Inc.**, San Jose, CA

*Analog & Mixed-Signal IC Design Engineer* Jan 2019 – Present

* Designing **PLL** circuits in 7nm for Xilinx’s Versal chip & other programmable products.
* Created VerilogA models to simulate the behavior of the fractional modes and the spread-spectrum feature of the PLLs.
* Created Verilog patterns to test different PLLs on the FPGA through Vivado design suite software.
* Developing post-silicon test automation environments to test PLL circuits’ functionality, jitter, & noise performances across PVT.

**STMicroelectronics**, Santa Clara, CA

*Device Validation Engineer (Analog & Mixed-Signal)* Feb 2017 – Jan 2019

* Responsible for post-silicon validation of **PreAmp** & **Motor driver** ASICs, including functional, performance, & corner analyses.
* Developed a fully-automated testbench to validate the performance of the Preamp Writer block at different data rates.
* Responsible for test plan development & for test automation through VB.NET scripts.
* Created VB.NET classes for measurement instruments like Tektronix DSA8300 & Agilent E5071C Network Analyzer.

**RFIC Lab, San Jose State University,** San Jose, CA

*Research Assistant* Feb 2017 – Jan 2018

* Worked on the tape-out of a Bluetooth Low Energy (BLE) based front end Receiver in 65nm CMOS technology.
* Designed high-speed circuits using the nanowire SGFET technology.

**Alexandria University, Faculty of Engineering**, Alexandria, Egypt

*Research & Teaching Assistant* Mar 2014 – Jan 2016

* Investigated the Optical characteristics of Lanthanide nano-particles in Optical sensors at the Smart CI Research Center.
* Co-authored in 2 journal papers, published in *Journal of Electronic Materials* & *Journal of Luminescence*.

**TECHNICAL SKILLS**

|  |  |
| --- | --- |
| * **Lab Equipment:** Network Analyzer, TDR, AWG, DSA, Oscilloscope, Multimeter, Function generator, Spectroscope, JBERT | |
| * **Simulation Tools:** Cadence Virtuoso, HSpice, WaveView | * **Programming:** VB.NET, Python, C, Matlab, Tcl |
| * **HDLs (RTL):** Verilog, VHDL | * **FPGA Design Tools:** Xilinx Vivado |
| * **Layout:** Cadence Virtuoso, L-Edit, Electric | * **Physical Verification:** LVS, DRC, Density rules |
| * **Microcontrollers:** Arduino, AVR |  |

**PROGRAMMING CERTIFICATIONS**

Programming using Python Specialization

by University of Michigan on Coursera. Certificate earned in April 2017.

Introduction to Programming the Internet of Things Specialization

by UC Irvine on Coursera. Last Certificate earned in August 2016.

**PUBLICATIONS**

*"A Low-power, High-resolution, 1 GHz Differential Comparator with Low-Offset and Low-Kickback"*

[**Aldacher**](http://link.springer.com/search?facet-creator=%22M.+Aldacher%22)**,M.**, Nasrollahpour, M., Hamedi-Hagh, S.

IEEE International Conference on Electronics, Circuits and Systems (ICECS), 2017, DOI: 10.1109/ICECS.2017.8292027

*“Design & Analysis of a nanowire SGFET-based 10GHz Frequency Synthesizer”*

**[Aldacher](http://link.springer.com/search?facet-creator=%22M.+Aldacher%22),M.**, Hamedi-Hagh, S.

New Generation of Circuits and Systems Conference (NGCAS), 2017, DOI: 10.1109/NGCAS.2017.50

*“Bluetooth Low Energy(BLE) based Direct down conversion Receiver Front End in 65nm CMOS”*

Nasrollahpour, M., Sreekumar, R., Hajilou, F., [**Aldacher**](http://link.springer.com/search?facet-creator=%22M.+Aldacher%22)**,M.**, Hamedi-Hagh, S.

New Generation of Circuits and Systems Conference (NGCAS), 2017, DOI: 10.1109/NGCAS.2017.44

*“Parametric study of up-conversion efficiency in Er-doped lanthanide hosts under 780/980 nm excitation wavelengths”*

[Samir](http://link.springer.com/search?facet-creator=%22E.+Samir%22),E., [Shehata](http://link.springer.com/search?facet-creator=%22N.+Shehata%22),N., [**Aldacher**](http://link.springer.com/search?facet-creator=%22M.+Aldacher%22)**,M.**, [Kandas](http://link.springer.com/search?facet-creator=%22I.+Kandas%22),I.

Journal of Electronic Materials, 2016, DOI: 10.1007/s11664-015-4331-2

*“Parametric study of up-conversion efficiency in Er-doped ceria nanoparticles under 780nm excitation****”***

[Shehata](http://link.springer.com/search?facet-creator=%22N.+Shehata%22),N., [Kandas](http://link.springer.com/search?facet-creator=%22I.+Kandas%22),I., [Samir](http://link.springer.com/search?facet-creator=%22E.+Samir%22),E., Meehan,K., [**Aldacher**](http://link.springer.com/search?facet-creator=%22M.+Aldacher%22)**,M.**

Journal of Luminescence, 2016, [DOI: 10.1016/j.jlumin.2016.03.013](http://dx.doi.org/10.1016/j.jlumin.2016.03.013)

**CURRICULUM PROJECTS**

*“1.9 GHz PLL with LC VCO”* Oct 2018 – Dec 2018

* Designed a 2nd order PLL with a bootstrapped charge pump & an LC VCO achieving rms jitter of 1.54 ps & an FOM of -235 dB.

Using VerilogA & Matlab, the PLL is modelled to achieve a phase margin of 56O, a BW of 1.4 MHz, & a locking time of 2 us.

*“50 MS/s 10-Bit Pipeline ADC”* Mar 2018 – May 2018

* Designed a 1.5-bit ADC consisting of a 2-stage comparator & a switching-capacitor MDAC with a gain-boosted telescopic OpAmp. Taking a 64-point FFT on the output in 2x-gain mode, ENOB achieved = 9.756 bits, SNR = 60.495 dB & total power = 2.0286 mW.

*“ADC & DAC Behavioral Modelling”* Jan 2018 – Feb 2018

* Modelled a 10-bit Pipeline ADC with digital correction & a 4-bit Flash ADC with DACs, using ideal components & using VerilogA.

*“Digital & Analog Clock Display using Digilent Basys3 Artix-7 FPGA”* Oct 2017 – Dec 2017

* Designed a clock whose seconds, minutes, & hours are displayed on a Quad 7-segment display. Picoblaze processor is used to control the Analog & Digital displays of the clock on a VGA display.

*“8x8 6T-SRAM Array with 3-8 row decoder”* Oct 2017 – Dec 2017

* Designed the layout of an 8x8 SRAM Array in TSMC 65nm CMOS with Read SNM = 0.24V, Write SNM = 0.36V, & Area = 1883um2.

*“10 GHz PLL using SGFET technology”* *(Published in NGCAS’17)* Oct 2016 – Dec 2016

* Implemented a 10.3GHz Charge Pump PLL using nanowire SGFET technology, with a tuning range = 3GHz–14GHz, & P = 35uW.

*“8-bit CMOS Microprocessor design”* Mar 2013 – Jun 2013

* Implemented the behavioral model of an 8-bit microprocessor using Verilog & its layout using L-Edit.

**ACTIVITIES**

First Focus Learning Center, Mountain View, CA

* Arduino *& Basic Electronics Instructor* (2016)

Alexandria University, Alexandria, Egypt

* *Head of the Marketing committee* **–** IEEE Alexandria University Student Branch (2011 – 2014)
* *Vice-Chairman & Head of the Marketing Committee* **–** Egypt Scholars Inc. | Alex. Univ. SC (2013 – 2014)
* *Cofounder & Board member* **–** E-WEB Scientific Association (2011 – 2012)