**Johnathan L. Williams**

# 10295 Willowbend Court Fishers, IN 46037 [johnathanw584@gmail.com](mailto:johnathanw584@gmail.com) (317)-850-0947

**Education:** Bachelor of Science in Electrical Engineering from Tuskegee University in May 2015 **Final GPA**: 3.700/4.0

Currently pursuing Master’s degree in Electrical and Computer Engineering at Purdue University

**Area of Concentration:** VLSI and Circuit Design. **Graduation Date:** May 2018

**Primary Objective:** Earn a full time offer in analog or digital circuit design

# Relevant Coursework

# Solid State Devices (Currently Taking)

# Radio Frequency Integrated Circuits (Currently Taking)

# Fundamentals of Nanoelectronics

# MOS VLSI Design (Fall 2015)

# Course Project: *Digital Design*

Utilized Cadence Virtuoso software to design both schematic and layout of 8x8 Wallace Tree Multiplier with pipelining techniques applied throughout the device.

# CMOS Analog IC Design (Fall 2016)

# Course Project: *Analog Design*

# Used Cadence Virtuoso simulation software to design a fully differential operational amplifier with common mode feedback. Same amplifier circuit eventually used in a low pass filter for both RC and switched capacitor design

# Digital Systems Design Automation (Spring 2017)

# Course Project: *Sat Solver*

Using C++ and with a partner wrote a SAT solver algorithm that tested an input Boolean function to determine a variable assignment that satisfied the given Boolean equation. If TRUE the program returned the variable assignment for all Boolean variables. If the function was not satisfiable, the program returned FALSE.

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# Work Experience

# Purdue University (West Lafayette, Indiana) (Fall 2015-present)

# Teaching Assistant for Linear Circuits Analysis I

**John Deere Tractor Cab Assembly Operations (Waterloo, Iowa) (Summer 2015)**

**-***Electrical Engineering Intern-Software Modifications-*

* Used the Integrated Development Environment known as the Tasking EDE (Embedded Development Environment) program to update software for a tractor’s controller hardware that would implement a new type of microprocessor.
* Updated the controller’s software using C programming language by changing the John Deere operating system’s function calls using new application programmable interfaces (API’s)
* Briefly analyzed warranty claims formed by customers over faulty or malfunctioning steering controllers in tractors. Underwent in depth tutorial sessions with a senior engineer to learn more about the controller’s internal hardware and circuitry design in order to determine a root cause for the device’s breakdowns in the field.

# NASA Goddard Space Flight Center (Greenbelt, Maryland) (June 2013-August 2013)

*-Simulations Software Electrical Engineering Intern –*

* + Studied and gained solid comprehension of electrical components designed and implemented in space flight such as temperature and pressure sensors including a variety of spacecraft control systems.
  + Personally designed and simulated several circuitry components such as operational amplifiers and multiplexers that would compose part of a thermopile pixel modulator-processing chip to later be deployed in space.
  + Used Mentor Graphics and Triad Semiconductors SystemVision® ViaDesigner simulation software for circuit design and integration.

**Research Experience**

**Tuskegee University (Tuskegee, Alabama) (September 2013-May 2015)**

*-Undergraduate Research-Robotics-(Dr. Fan Wu)*

* Designed, assembled, and programmed in C –based language robotic machines for Vex Robotics.
* Built and constructed autonomous mobile robots with numerous sensors and mechanisms to accomplish various assigned tasks.
* Earned and contributed to a publication as a co-author in ***Journal of Computer and Communications***: Fan Wu, and Johnathan Williams, “*Design and Implementation of a Multi-Sensor Based Object Detecting and Removing Autonomous Robot Exploration System”, Vol 2, No. 7, May 2014.*

# Georgia Tech SURE (Summer Undergraduate Research in Engineering) Robotics Program (Atlanta, Georgia) (Summer 2014)

*-Undergraduate Research-Mechanical/Robotic Machinery-(Dr. Jun Ueda)*

* Helped design and fabricate a mechanical and F-MRI (functional magnetic resonance imaging) compatible wrist rehabilitation device powered by a pneumatic rotary actuator for stroke patients.
* Used 3-D modeling software to design and 3-D print wrist support, hand brace, and the detachable base/fasteners for the vane actuator along with other components utilized in the design.
* Implemented Arduino UNO board and LabView programming connected to DAQ (Data Acquisition Device) hardware to test the individual components of the wrist rehabilitation device in order to measure and increase the overall performance.
* Co-author of technical brief submitted to the 2015 **DMD2015 (Design of Medical Devices) conference:** [Ilya Kovalenko](https://www.researchgate.net/profile/Ilya_Kovalenko3), [Jonathan Lai](https://www.researchgate.net/scientific-contributions/2081318796_Jonathan_Lai), [Johnathan Williams](https://www.researchgate.net/profile/Johnathan_Williams), and [Jun Ueda](https://www.researchgate.net/scientific-contributions/2072230646_Jun_Ueda), “*Design and Testing of a Pneumatic Hemiparesis Rehabilitation Device for a Neurofacilitation Exercise”*

# Tuskegee University (Tuskegee, Alabama) (January 2013-May 2013)

*-Undergraduate Research-Electric Power-(Dr. Jesmin Khan)*

* Studied and researched data analysis and compression techniques using Wavelet Packet Decomposition (WPD) in power grids.
* Analyzed the different implementations of algorithms and uses in electric power to improve energy efficiency in a city’s energy infrastructure.
* Shared my research work and notes with lead instructor and later helped present research to board of directors for IBM Company.
* Presented research work at corresponding Spring 2013 CURENT (*Center for Ultra-Wide-Area Resilient Electric Energy Transmission*) Industry Conference at University of Tennessee to learn about similar research with power and smart grids from other students and instructors to increase present knowledge of the topic.
* Earned and contributed to a publication as a co-author in ***Proc. of IEEE Industrial Electronics Society Conference IECON2014*:**

Jesmin Khan, Sharif Bhuiyan, Gregory Murphy, and Johnathan Williams, “*PMU Data Analysis in Smart Grid using WPD”*

# Relevant Skills:

* + Capable of designing and wiring circuit boards using a variety of equipment including sinusoidal waveform generators, oscilloscopes, digital multimeters, operational amplifiers, digital logic chips, as well as semiconductor devices including bipolar junction transistors, diodes, and MOSFETS.
  + Solid programming ability in C, C++. Programming experience includes the use of concepts such as object oriented programming, linked lists, priority queues, binary decision diagrams; and image manipulation of both 24bit and 16bit bmp (bitmap) images.
  + Has completed design projects using Cadence Virtuoso software for both circuit design, simulation, and layout. Also has previous experience in Matlab (rarely used), EasyC, LabView, SystemVision® Via Designer, Simulink, and the 3-D modeling software known as Solid Works.
  + Has working knowledge on operating and creating programs for arduino boards and other microcontrollers and have experience in using DAQ hardware including Texas Instruments Data Acquisition Device and Digilent Analog Discovery (DAQ) hardware.
  + Worked with Scooter’s Beyond Compare program to evaluate multiple iterations of source code and eventually uploading the modified software into repository databases including StarTeam and Tortoise SVN
  + Contains basic knowledge and 3 months’ worth of experience working in a clean room (Class 1000) and fabricating electronic devices for Senior Design Project.

# Extracurricular Activities/Memberships:

* + NSBE-National Society of Black Engineers member **(2013-2015)**
  + IEEE-Institute of Electronics and Electrical Engineers member (Hardware/Electronics Team Member) **(2013-2015)**
  + National Society of Leadership and Success (Sigma Alpha Pi) member (**2013,2014-2015)**
  + Golden Key Society Member **(2013-2015)**
  + NSBE Academic Excellence and Events Committee member (Tuskegee University Chapter) **(2013-2014)**
  + Tuskegee Institute Middle School Volunteer **(February 2014)**
  + Convoy of Hope Volunteer at the Indiana State Fairgrounds **(June 2016)**

# Awards/Honors:

* + Graduated Magna Cum Laude **(May 2015)**
  + Tuskegee University Merit Scholarship Recipient **(August 2011-2015)**
  + Chevron Scholar Award for Academic Performance **(March 2015)**
  + The Raamel C. Mitchell Engineering Excellence Award **(April 2014)**
  + Tuskegee University Honor Roll **(2011, 2012, 2013, 2014)**
  + Chevron Scholarship Recipient **(2013 and 2014)**