# MELROY MACHADO

# PROFESSIONAL PROFILE

- 3 years of research experience in Radio Frequency device design such as antennas, filters, couplers, waveguides, metamaterials etc. using HFSS and AWR Microwave Office.
- Extensive knowledge on Micro fabrication of RF and semiconductor devices.
- Knowledge and experience working in a Class 100 and Class 1000 Clean Room Facility.

# EDUCATION

#### University at Buffalo, The State University of New York

Master of Science in Electrical Engineering, June 2010

GPA: 3.7/4.0

Thesis: A -20dB Airlifted Micro-fabricated Directional Coupler for Ultra Wide Band Applications.

Honors Society: Eta Kappa Nu

Bachelor of Science in Electrical Engineering, May 2008

### FELLOWSHIP

Bird Technology Group Fellowship

# WORK EXPERIENCE

Research Fellow, Bird Technologies Group, Solon, OH

- Presently working on design and micro-fabrication of a directional coupler that can be implementable in industrial circuitry.
- Previously worked on the design of a ferrite loaded Broadband Marchand Balun.

Graduate Research Assistant, Multidisciplinary Nano and Microsystems Lab, University at Buffalo, Buffalo, NY

09/08 - Current

- Presently working on concepts and research in the line of Antenna design, Couplers, Metamaterials, Waveguides, Filters.
- Knowledge in micro fabrication of devices, thin film deposition, etching and patterning of structures using lithography and multi layer fabrication processes.

Intern, Multidisciplinary Nano and Microsystems Lab, University at Buffalo, Buffalo, NY

- Broadband rectenna design and fabrication for wireless power/signal harvesting and transmission.
- Use of shottky diodes to convert RF transmission to usable energy.

IT Consultant, Computer Information Technology, University at Buffalo, Buffalo, NY

- Assisted university students in solving problems with Microsoft Office and Linux based operating systems.
- Work involved Rapid troubleshoots of problems that occurred during the normal course of operation at the public computing sites.

# PUBLICATIONS

- D.E. Senior, X. Cheng, M. Machado and Y.K. Yoon, "Single and Dual Band Bandpass Filters Using Complementary Split Ring Resonator Loaded Half Mode Substrate Integrated Waveguide", IEEE Antenna Propagation Society 2010.
- C. Kim, H. Ahn, D.S. Elles, M. Machado and Y.K. Yoon, "A High Gain Circular Polarization Antenna using Metamaterial Slabs", IEEE Antenna Propagation Society 2010.

# PROJECTS

Selectable Amplifier System (Analog Circuits)

 Designed the layout of a single chip amplifier with digitally selectable gain using the concept of gates to select specific amplifiers that have gains of 0dB, 10dB, 20dB, 100dB.

### Solar Cell (Micro-fabrication)

• Designed and Fabricated three MIS photovoltaic diodes and a thin film resistor. Performed diagnostics such as C-V, I-V, Photovoltaic efficiency and Spectral Response for test data.

11/08 - Current

11/08 - Current

# 05/08 - 09/08

09/05 - 08/07

09/09 - 12/09

01/09 - 04/09

### Frequency Scrambler (Communication Design)

Designed a frequency scrambler working at GSM band. i.e. 850 MHz and 1.9GHz in a localized environment.

Directional Couplers (Radio Frequency and Microwaves)

• Designed a coupled line directional coupler (microstrip) at -20dB frequency using Microwave Office and fabricated the device using a PCB prototyping machine. The coupler was tested on a HP 8510C Network Anaylzer.

Clapper Circuit (Circuit Design)

• Designed a Clapper Circuit using integrated chips to switch on a light source with the clap.

# PROGRAM AND DESIGN SKILLS

- Extensive knowledge in Assembly language, C++, Pspice, Maple, Matlab, Microwave Office, Ansoft Designer, Ansoft HFSS, COMSOL Multiphysics modeling, Magic.
- PCB prototyping milling machine, HP8510C vector network analyzer, Agilent E4411B Spectrum analyzer, Spin Coater, Oscilloscope, Frequency Synthesizer, Alpha Step Profiler, Ellipsometer, Reactive Ion Etch, Karl Suss Mask Aligner, Thermal Evaporator, DC Sputter, Scanning Electron Microscope (SEM), Vacuum system, Electron Beam evaporater.

# LEADERSHIP

Open House Presenter, School of Engineering and Applied Sciences, Department of Electrical Engineering	ng,
University at Buffalo, Buffalo, NY	09/08 - Current
Resident Advisor, University Residence Halls and Apartments, University at Buffalo, Buffalo, NY	08/06 - 05/08
<b>Events Coordinator</b> , Indian Student Association, University at Buffalo, Buffalo, NY Awarded Executive Board Member of the Year 2006-07.	08/06-05/07

09/07 - 12/09

01/05 - 04/05