ABHINAV PANDEY

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OBJECTIVE

Looking for Fulltime/Co-Op in the area of Circuit Design/Fabrication Processes starting May 2011

EDUCATION

University of Florida   **Gainesville, FL, USA**
Master of Science, Electrical and Computer Engineering GPA: 3.85/4.0   **August 2009-Present**
Bipolar Analog IC Design, MOS Analog IC Design, Semiconductor Device Theory, Analog and Mixed-Signal Electronics for Biomedical Applications, VLSI, Advanced VLSI, Reconfigurable Computing.

Indian Institute of Technology Kanpur   **Kanpur, India**
Bachelor of Technology, Electrical Engineering GPA 7.9/10   **August 2005 – May 2009**
Microelectronics, VLSI, DSP, Organic Electronics, Electromagnetic Theory, Control Systems, RF Systems

INTERNSHIPS

- **Design of a Mass Flow Rate Controller**   **(May 2008-August 2008)**
  Dr. Franz Durst   *FMP Technology GMBH, Erlangen, Germany*
  Designed and simulated a mass flow rate controller using Simulink and AMESIM. Fluid is held at critical pressure to improvise settling time. This project was later approved for commercial production.

- **Controlling Movement of a Survey Spot Antenna**   **(May 2007- July 2007)**
  Dr. Leonhard Reindl   *IMTEK, University of Freiburg, Freiburg, Germany*
  Wrote a C code to control the movement of antenna for making a map of neighboring antennas. The subroutine has a function to make a map of surrounding antennas and to store their coordinates.

PROJECTS

- **Modeling of High Speed Air Gap Interconnect**   **(May 2010 - Present)**
  Prof. Rizwan Bashirullah   *University of Florida, Gainesville, FL*
  Modeled distributed R, L, G, and C parameters of a novel air gap interconnect using experimental S parameters. The extracted attenuation constant shows significant improvement over interconnects made by Intel and Tyco at higher frequencies. Air gap interconnects are shown to have 2x increase in bandwidth over Tyco and Intel.

- **Vertical Waveguide using Micro-Stereo lithography**   **(March 2010 - Present)**
  Prof. Toshikazu Nishida   *University of Florida, Gainesville, FL*
  Fabricated high density (2.5×10^5 structures/in^2) array of cylindrical holes over an area of 3.5in^2 by using a novel contact based Micro Stereo Lithography. The target aspect ratio is 300:1 with minimum feature size of 9μm. Also based upon experimental results a more generalized equation for curing depth is derived.

- **Design of Analog Equalizer for USB 3.0**   **(Jan 2010 – May 2010)**
  Prof. Robert Fox   *University of Florida, Gainesville, FL*
  Designed a continuous time adaptive analog equalizer using active feedback topology. The equalizer is designed without using an inductor in order to maintain a small area. The equalizer has a 20dB gain at 3 Gbps data rate. Jitter is calculated and used to vary the gain of feedback loop by changing bias current.

- **Effect of TiO_2 nanoparticle on Organic Solar Cell**   **(Aug 2008 – April 2009)**
  Prof. S. S. K. Iyer   *IIT Kanpur, Kanpur, India*
  Organic Solar Cells were fabricated with TiO_2 nanoparticle in the active layer in a class 1000/100 clean room. Fabrication process included thin film deposition, e-beam deposition, etching, lithography. This project was done as Senior Year Project.

COURSE PROJECTS

- **Design of a Ultra Low Power Bio Signal Processor**   **(March 2010 – May 2010)**
An ultra-low power bio signal processor is made for physiological signal. Output is generated at every 0.2 seconds. Dual ported custom SRAM cell, designed in Cadence and serialized FFT is used to keep the power budget low. The design is implemented in $0,25\mu$ technology and the power consumption comes out to be $6.3\mu W$.

- **Design of a Switch Capacitor Amplifier**   **(April 2010 – May 2010)**
A switch capacitor amplifier with variable gain is implemented using $0.25\mu m$ technology. Cascoded topology for Op-Amp is used with boot strap used for biasing. Also the constraints on sampling frequency were discussed.

- **Design of 5th Order Chebyshev Filter**   **(March 2010 – April 2010)**
A 5th order chebyshev filter with cutoff frequency of 10MHz was implemented in $0.25\mu m$ technology. The filter is implemented using fully differential Gm-C filter topology.

- **Design of Voltage Regulator**   **(November 2009 – December 2009)**
A band gap reference is designed using $0.25\mu m$ technology. The circuit had a temperature stability coefficient of 0.003% per ^{0}C and line regulation of 0.067%. 10uF capacitive load resulted in a GBW of 38KHz. Short circuit protection was also implemented.

- **Analytical Model for FinFET Devices**   November 2009- December 2009)
Carrier concentration based approach is used to derive the J-V characteristic of both Common gate and Independent gate DGMOSFET. Quantum mechanical effects are also included in the model. The whole model is simulated using MATLAB and results comes out to be in good agreement with the previous work

- **Optical Modeling of Organic Solar Cell**   **(March 2009 – May 2009)**
Modeling of optical electric field inside an Organic Solar Cell is done. Instead of conventional transfer matrix algorithm, a new method using intrinsic impedance is used to do the modeling. This resulted in significant reduction in computation power. Role of optical spacer is discussed and shown that how it can help in increasing absorbance.

- **Single Ended Sense Amplifier**   **(March 2009 – May 2009)**
A new model of single ended sense amplifier was simulated using Mentor Graphics. Monte Carlo simulations were done to study the effect of process variation and current mirror mismatch. A significant improvement of 40% in read time was observed.

ACHIEVEMENTS

- Awarded Certificate of Outstanding Academic Achievement at University of Florida.
- Recipient of Academic Achievement Award at University of Florida.
- Ranked 1st in national level electronic circuit design competition (ECDC), Techkriti 07
- Ranked 2nd in national level electronic circuit design competition (ECDC), Techkriti 06
- Awarded CBSE Merit Scholarship for outstanding performance in All India Engineering Entrance Examination 2005

PUBLICATIONS

A. Pandey, S. Sawant, E. Schwartz, "***Handwritten character recognition using template matching,***" submitted to Florida Conference on Recent Advances in Robotics, May 2010.

S. Sawant, A. Pandey, E. Schwartz, "***Object detection & template matching in sub aquatic environment,***" submitted to Florida Conference on Recent Advances in Robotics, May 2010.

TECHNICAL SKILLS

- **Software Packages**: HFSS, ADS, Cadence, Mentor Graphics, PSpice, MATLAB, Simulink, and Labview
- **Programming Languages:** C, C++, Java, VHDL