

JOEL C. THOMAS

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ELECTRICAL ENGINEER

Skilled with both good theoretical knowledge and research experience in electrical engineering, process technology, modeling and simulation. Over 4 years of experience with statistical data analysis. Excellent written and verbal communication skills and extensive experience in technical documentation.

Application Software/ Programming

- Matlab, COMSOL
- DesignCAD LT
- Microcal Origin, Mathcad
- C, C++
- Verilog, VHDL
- Pspice, CALP
- MS Office, MS Visio
- DB2, SQL, SAS, and SPSS
- SILOS, Quartus
- COBOL, JAVA, and PHP

Operating System/Assembly Language

- Unix, Linux
- Windows
- Mainframe OS/390, z/OS
- INTEL 8085/8086
Microprocessor
- PIC Microcontroller

Education

Master of Science, Electrical
Engineering– GPA: 3.5/4
University of Houston
Houston, TX – Jan 2010

Bachelor of Engineering,
Electrical and Electronics
Engineering– GPA: 8.2/10
Sathyabama Institute of
Science and Technology,
Chennai, India – May 2005

Defending my master's thesis in
January 2010 and available to
work full-time from February
2010.

Professional and Research Experience

RESEARCH ASSISTANT, Electrochemical Nanofabrication and
Nanomaterials Synthesis Laboratory, University of Houston, Texas,
June 2008 – Present

*Research lab at UH dedicated towards electrochemical processes in
semiconductor fabrication.*

- Research aimed to enhance the understanding of planarization of
copper interconnects during fabrication using electropolishing
which will work alongside of CMP.
- Modeled Cu Surface Morphology Evolution during
Electropolishing and its simulation by image analysis in Matlab.
- Created a toolbox script in Matlab with complete UI handling
Fourier analysis of image processing and other parameters.
- Expertise in Planarization and Electroplating of Copper using
novel electrochemical techniques for micro and nanofabrication.
- Designed and printed sub-micron and nm features using e-beam
lithography on Silicon wafers.
- Deposited 10 to 100 nm thin films of Ti, Ta, Au, etc. using PVD
- Surface morphology analysis using SEM, AFM etc.
- Setup new fab tools: Semitool ECD Raider M.
- Worked in Class 10 and Class 100 clean room facility.

STATISTICAL ANALYST, Measurement and Evaluation Center,
University of Houston, Texas, Jan. 2008–Dec. 2008

*University initiative to offer consulting on data collection and data
analysis for research, surveys and exam scores.*

- Performed statistical analysis on research data and surveys
conducted at UH using statistical software (SPSS and Excel VB).
- Delivered clear and concise documentation on all data analysis.
- Chi-square tests, reliability tests, factor analysis, regression
analysis, etc.

SOFTWARE ENGINEER/BUSINESS ANALYST, Infosys
Technologies Ltd., Bangalore, India, Nov. 2005–July 2007

*Leading global provider of business and technology consulting, and
software solutions. Over 100,000 employees worldwide.*

- Software application development, maintenance and testing at
CMMI level 5 for a fortune 500 client.
- Business requirement analysis and data analysis using DB2,
SQL and SAS.
- Coordinated and worked on projects with clients from various
locations across time zones.

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Instrumental Proficiency

- Electrochemical Methods (Electropolishing, Electroplating, Linear Sweep Voltammetry)
- SEM (Scanning Electron Microscope) with NPGS and E-Beam Lithography Tool
- SEM with FIB (Focused Ion Beam) and EDS (Energy Dispersive X-ray Spectroscopy)
- AFM (Atomic Force Microscope)
- Sputtering System,
- Thermal evaporation
- E-beam evaporation
- Resist Spin Coater
- Wet Etching
- Ellipsometer
- Alpha Step Profilometer
- Potentiostat/ Galvanostat with Rotating Disk Electrode (RDE)
- Semitool ECD Raider
- Altera DE2 Board

Authorized to work in US and currently possess valid EAD card.

Publications and Conferences

- Symposium Presentation on “*Modeling of Copper Surface Morphology Evolution during Electropolishing*”, **Joel C. Thomas** and Stanko R. Brankovic at 38th Semi-annual TcSUH Student Symposium, Houston, TX Dec. 2009.
- Symposium Paper and Presentation on “*Modeling of Copper Surface Morphology Evolution during Electropolishing*”, **Joel C. Thomas** and Stanko R. Brankovic at First International Symposium on Nanotechnology, Energy and Space, Houston, TX Oct. 2009.
- Conference Paper and Poster Presentation on “*Modeling of Cu Surface Morphology Evolution during Electropolishing*”, **Joel C. Thomas** and Stanko R. Brankovic at Graduate Research Conference, Houston, TX May 2009.

Research and Academic Projects

- **Master’s Thesis:** Modeling of Copper Surface Morphology during Electropolishing.
Thesis Committee: Dr. Stanko R. Brankovic (Advisor & Chair), Dr. Dmitri Litvinov, Dr. Francisco Robles-Hernandez.
- Modeling of Electron Beam Lithography system for multi-pass and gray scale imaging using MATLAB.
- Modeling of Optical Lithography system using MATLAB to study the relation between pitch, exposure, and feature size.
- Modeling and simulation of one of the legs of silicon microrobot on COMSOL Multiphysics for MEMS.
- Design and simulation of “4 bit NAND Full Adder” using CALP and PSPICE.
- Design, simulation and demonstration of “Numerical Score Prediction Game System” with DE2 board, Keypad, 7-segment display and triggers using SILOS and QUARTUS.
- Development of a model with Micro-controller for “GPS Based Collision Mitigation and Vehicle Guidance”.

Achievements and Other Activities

- Recipient of Academic Competitive Scholarship Award at University of Houston.
- Certified in General Laboratory Safety and Hazardous Materials Orientation.
- Member of IEEE (Institute of Electrical and Electronics Engineers), UH Nanofabrication Facility, Texas Center for Super Conductivity (TcSUH), Phi Beta Delta Honor Society, Houston Bridges(an association to help International Students).
- Editor and author of “How-to-do tips on Computer and Office applications” at www.lytebyte.com
- Media Equipment Coordinator at City of Refuge Church, Houston.