DENNIS RICH

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Website | dennisrich.me

EDUCATION

University of Illinois — GPA: 4.0/4.0
Dual B.S. in Electrical Engineering and Engineering Physics — Champaign, IL | Expected May 2019

Related Coursework

Advanced Fabrication Laboratory	Linear Algebra	Advanced Electromagnetics
Semiconductor Analysis	Quantum Mechanics I and II	Computer Systems and Programming

EXPERIENCE

Innovative Compound Semiconductor Laboratory — University of Illinois
Project Leader — October 2015 - Present

- Developed new CMOS fabrication process, communicating with and guiding lab members in its implementation
- Programmed MATLAB analysis tool with user interface for theoretical stress-induced cracking calculations
- Fabricated and characterized semiconductor devices with e-beam, profilometry, and more in cleanroom environment

Silicon Labs — Nashua, NH (Timing Division)
Project Leader — May 2017 - August 2017

- Designed new splitting techniques for preserving signal integrity in PCB-based transmission lines
- Analyzed and diagnosed circuitry and layout deficiencies in phase-locked loop designs

Patankar Research Group — Northwestern University
Computational Analytics Researcher — May 2014 – August 2014

- Collected and analyzed molecular data of waterproof system with thorough simulation in C++
- Implemented original mathematical methods of analysis, generating free energy data that supported guiding hypothesis

Mesoscopic Physics Group — Northwestern University
Laboratory Researcher — May 2013 – August 2013

- Synthesized and analyzed carbon nanotube MEMS devices with CVD, AFM, chemical analysis, and self-taught knowledge
- Electrically tested thermoelectric properties of quantum dot structures

LEADERSHIP

Engineers Without Borders — University of Illinois
Project Chair, *Guatemala Water Project* — September 2015 - Present

- Managed a total of $10,000 in project budget while directing fundraisers that contributed significantly to that amount
- Oversaw design workshops and worked with mentors to implement water delivery infrastructure in Guatemala

Formula Electric Racing — University of Illinois
Subsystem Leader, *Low-Voltage Electronics* — September 2015 - May 2017

- Designed and implemented circuitry to control time-sensitive signals with frequency-based processing methods
- Guided new members through a rigorous circuit design process, evaluating designs and giving constructive feedback

SKILLS

Laboratory

Fabrication: E-beam, photolithography, masked wet etching, electroplating, mechanical thin-film separation
Characterization: PCB oscilloscope testing, AFM, SEM, Profilometry, Raman spectroscopy, Nomarski microscopy

Software

Experienced: MATLAB, C, C++, Visual Molecular Dynamics, Eagle Circuit CAD, Autodesk Inventor
Familiar: LTSpice, Python, HTML/Javascript, Excel VBA

AWARDS AND HONORS

Goldwater Scholar - Nationally competitive award of $7,500 per year to 240 promising researchers — 2017-2019
Chancellor's Scholar - 120 freshmen selected from 7,000: the highest academic honors program at UIUC — 2015-2019
Ford Foundation Engineering Scholar - 100 freshmen selected from 7,000 for merit-based scholarship — 2015-2016

PUBLICATIONS

The Thermodynamics of Restoring Underwater Superhydrophobicity
Paul R. Jones, Adrian T. Kirn, Y. David Ma, **Dennis T. Rich**, and Neelesh A. Patankar. *Langmuir* **2017** *33* (11), 2911-2919.

High-Performance Thin-Film GaN Transistors through Controlled Spalling
Rich, Dennis, Kai Zhang, and Can Bayram. *In progress*, expected February 2018.