Daniel Grissom

901 East Alosta Ave., Azusa CA 91702
West Campus Building One, Room 204

p: 626-969-3434
e: dgrissom@apu.edu
w: DanGrissom.com
w: apu.edu/clas/faculty/dgrissom

EDUCATION

University of California, Riverside (UCR) – Riverside, CA
Ph.D. in Computer Science   **2009 – 2014**
Thesis: "Design of Topologies for Interpreting Assays on Digital Microfluidic Biochips"

University of California, Riverside (UCR) – Riverside, CA
M.S. in Computer Science   **2009 – 2011**
Project: "A Real-time Architecture for a Programmable Digital Microfluidic Biochip"

University of Cincinnati (UC) – Cincinnati, OH
B.S. (Honors) in Computer Engineering   **2003 – 2008**
Areas of Concentration: Architecture, VLSI Design
Honors: Magna Cum Laude

TEACHING EXPERIENCE

Azusa Pacific University (APU) – Azusa, CA
Department of Engineering & Computer Science, Assistant Professor   **2014 – Present**
Independently designed, ran and taught computer science courses:
  - Introduction to Computer Science I (CS 220: F14, S15, F15, F16)
  - Introduction to Computer Science II (CS 225: S15, S16)
  - Systems Programming II (CS 340: S15, S16)
  - Artificial Intelligence (CS 430: F14, F15, F16)
  - Computer Organization (CS 445: F14, F15)
  - Software Engineering (CS 470: F16)
  - Topics In CS: Social Impact of CS (CS 495: F15)
  - Topics In CS: Namibia Health Informatics Project (CS 495: S16)

University of California, Riverside (UCR) – Riverside, CA
Department of Computer Science, Teaching Assistant   **2009 – 2010**
Ran labs, advised senior-design projects, graded assignments, computed final grades:
  - Project in Computer Science: Embedded Systems (CS 179J, Dr. Brisk: S10)
  - Introduction to Computer Programming (CS 005, Dr. Klefstad: W10, F09)

CURRENT RESEARCH PROFILE

Synthesis of Digital Microfluidic Biochips (DMFBs)   **2009 – Present**
  ORIGIN: Pioneered non-existent research area at UCR w/ Dr. Philip Brisk
  FOCUS: Synthesis of DMFBs for practical, generally-programmable devices
  MOTIVE: To reduce the price and increase usability of microfluidic platforms for more efficient laboratory research, clinical diagnostics, etc
  WHO: Primary collaboration with Dr. Philip Brisk (UCR) and a number of UCR/APU students
  KEY ACCOMPLISHMENTS:
    - Basis of Master's (UCR) and Ph.D. (UCR) dissertations
    - Release of open source simulator used by reserach groups around the world
    - Focus of dissertation
    - 16 (to date) peer-reviewed publications in top international journals/conferences

The Restorative Effect of Beauty   **2016 – Present**
  ORIGIN: Formed collaboration w/ Dr. Teresa Pegor's (APU, Psych. Dept.) existing research
  FOCUS: Specialized virtual-reality environments with the Oculus Rift and/or HTC Vive platforms
  MOTIVE: To study the restorative/destructive effect that natural/urban landscapes have on the mind
  WHO: Primary collaboration with Dr. Teresa Pegors (APU) and a number of APU students
  KEY ACCOMPLISHMENTS:
    - Currently mentoring 2 students for independent projects (project in initial stages)

Namibia (Africa) Health Informatics Project   **2015 – Present**
    ORIGIN: Formed collaboration w/ Namibia University of Science & Technology in May 2015 to work on project w/ social impact
    FOCUS: Research and development of an electronic medical record and health system for Namibia's public health sector
    MOTIVE: To improve inefficiencies caused by paper-based, medical-record systems
    WHO: Primary collaboration with Dr. Nggada/Dr. Akinsola (NUST) and a number of APU/NUST students
    KEY ACCOMPLISHMENTS:
- Formed international team of students, professors, doctors and IT specialists
- Created 1-unit course in which 11 students performed background research; took 10 to Africa
- Currently mentoring a number of students to research and develop a platform (project in initial stages)

RELATED PROFESSIONAL & RESEARCH EXPERIENCE (PAID)

Zyante (zyBooks) Inc. – Azusa, CA
Contributor/Paid Consultant   **2016 – Present**
Authored sections in *Fundamentals of Data Analytics* and *Data Structures Essentials* zyBooks, an emerging, interactive web-book style with "Less text, more action".

Environmental Systems Research Institute (ESRI) – Redlands, CA
Software Developer, Intern   **2013**
Contributed new features and functionality for ESRI's primary, next-generation Geographic Information Systems (GIS) software.

University of California, Riverside (UCR) – Riverside, CA
Graduate Research Assistant   **2010 – 2014**
Created several simulators, designed and executed experiments, wrote and presented papers, created and presented posters, mentored younger students.

University of Tennessee, Knoxville (UTK) – Knoxville, TN
Researcher   **2012**
Developed and prototyped a hardware/software solution to control digital microfluidic biochips fabricated by researchers at UTK.

Advanced Micro Devices (AMD) – Austin, TX
Performance Engineer, Co-op   **2007**
Gathered and analyzed performance data from latest AMD processors and platforms.

Northrop Grumman, Xetron – Cincinnati, OH
Software Engineer, Co-op   **2005 – 2006**
Assisted in development of multiple internal and external software projects and obtained Top-Secret security clearance.

Wright-Patterson Air Force Base Research Lab – Fairborn, OH
Wright Scholar Research Assistant   **2002 – 2004**
Wired instrumentation, created AutoCAD drawings, gathered and examined data for turbine engine tests.

RELATED FREELANCE EXPERIENCE (UNPAID/VOLUNTEER)

PreceptMe – Azusa, CA   **2015 - Present**
Created software requirements documentation and interfaced with external developers to ensure successful development of application prototype for startup company.

Barebacks Clothing – Riverside, CA   **2012 - 2015**
Created modern website with fully-functional web-store and managed finances of small startup company.

REFEREED PUBLICATIONS AND PAPERS

Performance Improvements and Congestion Reduction for Routing-based Synthesis for Digital Microfluidic Biochips
S. Windh, C. Phung, D. Grissom, P. Pop and P. Brisk
IEEE Transactions on Computer-Aided Design (TCAD) of Integrated Circuits and Systems, 2016

PCB Escape Routing and Layer Minimization for Digital Microfluidic Biochips
J. McDaniel, Z. Zimmerman, D. Grissom and P. Brisk
IEEE Transactions on Computer-Aided Design (TCAD) of Integrated Circuits and Systems, 2016

An Open-source Compiler and PCB Synthesis Tool for Digital Microfluidic Biochips
D. Grissom et al.
Integration: The VLSI Journal
Vol. 51, September, 2015, pp. 169-193

Rapid Online Fault Recovery for Cyber-physical Digital Microfluidic Biochips
C. Jaress, P. Brisk and D. Grissom
IEEE VLSI Test Symposium (VTS), Napa, CA, 2015

Performance and Cost Analysis of NoC-Inspired Virtual Topologies for Digital Microfluidic Biochips
D. Grissom and P. Brisk
International Symposium on Integrated Circuits (ISIC), Singapore, 2014

A Low-Cost Field-Programmable Pin-Constrained Digital Microfluidic Biochip
D. Grissom, J. McDaniel and P. Brisk
IEEE Transactions on Computer-Aided Design (TCAD) of Integrated Circuits and Systems
Vol. 33, No. 11, October, 2014, pp. 1657-1670

Multi-terminal PCB Escape Routing for Digital Microfluidic Biochips using Negotiated Congestion
J. McDaniel, D. Grissom and P. Brisk
International Conf. on Very Large Scale Integration (VLSI-SoC), Playa Del Carmen, Mexico, 2014

Fast Online Synthesis of Digital Microfluidic Biochips
D. Grissom and P. Brisk
IEEE Transactions on Computer-Aided Design (TCAD) of Integrated Circuits and Systems
Vol. 33, No. 3, March, 2014, pp. 356-369

Exploring Speed and Energy Tradeoffs in Droplet Transport for Cyber-Physical Digital Microfluidic Biochips
J. Fiske, D. Grissom and P. Brisk
Asia & South Pacific Design Automation Conference (ASP-DAC), Singapore, 2014

Interpreting Assays with Control Flow on Digital Microfluidic Biochips
D. Grissom, C. Curtis and P. Brisk
ACM Journal on Emerging Technologies (JETC) in Computing Systems
Vol. 10, No. 3, April, 2014, Article No. 24

A Field-Programmable Pin-Constrained Digital Microfluidic Biochip"
D. Grissom and P. Brisk
Design Automation Conference (DAC), Austin, TX, 2013

A Digital Microfluidic Biochip Synthesis Framework
D. Grissom, K. O'Neal, B. Preciado, H. Patel, R. Doherty, N. Liao and P. Brisk
International Conference on Very large Scale Integration (VLSI-SoC), Santa Cruz, CA, 2012

Force-directed List Scheduling for Digital Microfluidic Biochips
K. O'Neal, D. Grissom and P. Brisk
International Conference on Very large Scale Integration (VLSI-SoC), Santa Cruz, CA, 2012

Fast Online Synthesis of Generally Programmable Digital Microfluidic Biochips
D. Grissom and P. Brisk
ESWEEK (CODES+ISSS), Tampere, Finland, 2012

Path Scheduling on Digital Microfluidic Biochips
D. Grissom and P. Brisk
Design Automation Conference (DAC), San Francisco, CA, 2012

A High-Performance Online Assay Interpreter for Digital Microfluidic Biochips
D. Grissom and P. Brisk
Great Lakes Symposium on VLSI (GLS-VLSI), Salt Lake City, UT, 2012

NON-REFEREED PRESENTATIONS & INVITED TALKS

Potential Connections: APU & Namibia University of Science & Technology (NUST)
Invited talk presenting microfluidic research and potential areas for collaboration, Windhoek, Namibia (Africa), 2014.

Software Control of Cyber-physical Electrowetting Devices
Invited talk presented at the 9th International Meeting on Electrowetting and Related Micro/Electrofluidic Science and Technology, Cincinnati, OH, 2014.

Performing Biochemical Reactions on Digital Microfluidic Biochips
Invited talk presented to an Azusa Pacific University undergraduate computer science class, Azusa, CA, 2013.

Fast Online Synthesis of Digital Microfluidic Biochips
Invited talk presented at University of California, Riverside, Computer Science Graduate Colloquium, Riverside, CA, 2013.

Programmable, Integrated Microfluidic Technology: Automated and Miniaturizing Chemistry and Biochemistry
Tutorial presented at the SIGDA-DAC Design Automation Summer School, Austin, TX, 2013.

System Support for Generally Programmable Digital Microfluidic Biochip Devices
Poster presented at the NSF CPS Principal Investigator Meeting, National Harbor, MD, 2011.

Programmable Digital Microfluidic Biochips
Poster presented at the Inland Empire Tech Week Poster Session, San Bernardino, CA, 2010.

AWARDS, FELLOWSHIPS & GRANTS

California Space Grant, *APU*	**2016**
Dissertation Year Program Fellowship, *UCR*	**2013 – 2014**
National Science Foundation Graduate Research Fellowship (NSF-GRFP), *UCR*	**2010 – 2013**
DAC Young Student Support Program Award, *UCR*	**2011**

PATENTS

Deadlock-Free Droplet Routing on a Digital Microfluidic Biochip
U.S. Provisional Patent Application Serial No. 61/607,931, Filed March 7, 2012.

RELATED PROFESSIONAL ACTIVITIES & SERVICE

Robotics Club Advisor, *APU*

ACM Club Advisor, *APU*

Service Learning Faculty Fellows, *APU*

Computer Science Graduate Student Association (CompGSA) President, *UCR*

Tau Beta Pi Member, *UC*

Eta Kappa Nu Member, *UC*

Engineers Without Borders Webmaster, *UC*

STUDENTS MENTORED & SUPPORTED

Digital Microfluidics Projects

2 APU Undergrad Students: Chris Hansen, Jordan Ishii.

12 UCR Undergrad Students: Johnathan Fiske (#), Calvin Phung (+), Neri Lemus, Nathan Hapeman, Johnnie Kwok, Yesenia Vital, Benjamin Preciado (+), Hiral Patel (+), Robert Doherty (+), Michael Warren, Douglas MacDuff, Vien Ngo.

10 UCR Grad Students: Skyler Windh (#+), Mark Louton, Ben Sanders, Navin Kumar, Umesh Moghariya, Pavan Panjam, Ioannis Gasparis, Eddy Lixandru, Michael Albertson, Francesca Perkins.

2 UCR Undergrad/Grad Students: Chris Curtis (+),(#+) Kenneth O'Neal.

1 Georgia Tech Undergrad: Nick Liao (+).

1 UC Grad Student: Madhuri Gupta.

Miscellaneous Projects (*APU Undergrad Students*)

Namibia Health Informatics Project (Ember JS): Sarah Harkin, Brian Robert Cajulis, Sarah Marley, Jonathan Ming, Jonathan Aichler, Joey Saucedo, Ken Beard, Nico Chera, Justin Bowman, Josh Dubisz, Peter Cusack.

Pysch: Restorative Impact of Beauty (Oculus Rift): Chris Hansen, Joey Saucedo.

Church Startup (Vaadin Web-App): Jordan Ishii, Josh Wood, Chris Hansen.

CS460 Ind. Proj. (Arduino Car + Sensors): George Vine.

#+ - Denotes that students have published with me as primary (#) *or secondary* (+) *author.*