C V

D A N I E L   G R I S S O M, Ph.D.

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EDUCATION

University of California, Riverside (UCR) – Ph.D., Computer Science   **2009-2014**
- Thesis: "Design of Topologies for Interpreting Assays on Digital Microfluidic Biochips"
- NSF Graduate Research Fellow, UCR Dissertation Year Fellow

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

University of Cincinnati, - B.S., Computer Engineering   **2003-2008**
- Areas of Concentration: Architecture, VLSI Design
- GPA: 3.861, Magna Cum Laude, Graduated w/ Honors

Xenia High School   **1999-2003**
- Co-valedictorian of 350, Honors Diploma, Summer Engineering Intern (Wright Scholar Program)

RELEVANT EMPLOYMENT HIGHLIGHTS

Azusa Pacific University, Dept. of ENG/CS – Azusa, CA | Associate Professor   **2014-Present**
- Taught and designed variety of lower and upper-level undergrad Computer Science courses
- Supervised numerous student projects/research in areas of digital microfluidics, A.I. applications, etc.

Qmerit – Irvine, CA | Paid Software Engineering Consultant   **2019-Present**
- Performed data analytics using production data and built machine learning models to help improve product effectiveness. (Python, Java)

Zyante (zyBooks) Inc. – Azusa, CA | Contributor/Paid Consultant   **2016**
- 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 | SW Dev Intern   **2013**
- Contributed new features and functionality for ESRI's primary, next-generation Geographic Information Systems (GIS) software. (C++, C#)

University of California, Riverside, Dept. of ENG/CS – Riverside, CA | Grad Research Asst.   **2010-2014**
- Created several simulators, designed and executed experiments, wrote and presented papers, created and presented posters, mentored younger students. (C++, Java)

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

Tellus Web – Cincinnati, OH | .NET Developer   **2009-2010**
- Developed back-end functionality for e-commerce websites and maintained direct relationship with customers. (SQL, C#)

Advanced Micro Devices (AMD) – Austin, TX | SW Dev Intern   **2007**
- Gathered and analyzed performance data from latest AMD processors and platforms.

Northrop Grumman, Xetron – Cincinnati, OH | SW Dev Intern   **2005-2006**
- Assisted in development of multiple internal and external software projects and obtained Top-Secret security clearance. (C++)

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

SKILLS

Tech Skills – Preferred (Also Experienced With)
- **Core OOP** – Java, C++ (C#)
- **Mobile App & Full Stack** – React Native, JavaScript, HTML/CSS, Node/Express, GraphQL
- **AI/Machine Learning** – Python
- **Embedded Systems** – Arduino (C, VHDL, etc.)
- **Productivity** – GIT, Microsoft Office, Google Apps, Slack, Trello, TeamGantt, etc.
- **Soft** – Oral/Visual Presentation, Technical Writing, Project Management, Organization

TEACHING EXPERIENCE

Azusa Pacific University (APU)

Department of Engineering & Computer Science | Associate Professor   **2014-Present**

Independently designed, ran and taught computer science courses:
- Introduction to Computer Science I (CS 120: F14, S15, F15, F16, S17)
- Introduction to Computer Science II (CS 125: S15, S16, S17, F17, S18, F18, S19, F19, S20)
- Assembly Programming (CS 240: S15, S16, S17)
- Artificial Intelligence (CS 430: F14, F15, F16, F17, F18, F19)
- Computer Architecture & Organization (CS 360: F14, F15)
- Mobile App Development – React Native (CS 440: F17, F18, F19)
- Software Engineering (CS 470: F16, F17, F18, F19)
- Senior Capstone Project (CS 480: S17, S18, S19, S20)
- Topics In CS: Social Impact of CS (CS 495: F15)
- Topics In CS: Namibia Health Informatics Project (CS 495: S16, F16, S17, F17, S18, F18, S19, F19, S20)
- Topics in CS: Machine Learning (CS 495: S20)

University of California, Riverside (UCR)

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)

STUDENTS MENTORED & SUPPORTED

Digital Microfluidics Projects   **2010-Present**
- *4 APU Undergrad Students:* Chris Hansen, Jordan Ishii, Brett Arnold, Tino Madrid
- *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

Namibia Health Informatics Project   **2016-Present**
- 50+ students through project course (30+ students taken to Africa for technical service project)

Collaborative Research and/or Student Projects   **2015-Present**
- **Restorative Impact of Beauty** (VR/Oculus research proj. w/ Psych. Dept.): Chris Hansen, Joey Saucedo
- **Organization Startup Framework** (Vaadin Web-App): Jordan Ishii, Josh Wood, Chris Hansen
- **Object Avoiding RC Car** (Arduino Car + Sensors): George Vine
- **Video Game Development** (Java): Andrew Akiyama, Joshua Sasaki
- **Parking Lot Spot Finder** (Machine Learning & 3D Modeling): Nico Chera, Kyle Nakamura

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

CLUBS

Azusa Pacific University (APU)   **2015-Present**
- ACM Club Advisor
- Virtual Reality Club Advisor
- Robotics Club Advisor

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R E S E A R C H & S C H O L A R S H I P
D A N I E L G R I S S O M, Ph.D.

Azusa Pacific University & University of California, Riverside   **2012-Present**

1. **A Compiler for Cyber-physical Digital Microfluidic Biochips**, C. Curtis, D. Grissom and P. Brisk, *International Symposium on Code Generation and Optimization (CGO), Vienna, Austria, 2018*.

2. **Resource-Constrained Scheduling for Digital Microfluidic Biochips**, K. O'Neal, D. Grissom and P. Brisk, *ACM Journal on Emerging Tech. in Computing Systems (JETC)*, Vol. 14, No. 1, March, 2018.

3. **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, Vol. 36, No. 1, January, 2017, pp. 41-54.

4. **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, Vol. 36, No. 1, January, 2017, pp. 69-82.

5. **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.

6. **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.

7. **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.

8. **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.

9. **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.

10. **Software Control of Cyber-physical Laboratories-on-a-Chip**, *36th Annual International conference of the IEEE Engineering in Medicine and Biology Society,* Chicago, IL, USA, August 26-30, 2014 (1 page).

11. **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.

12. **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.

13. **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.

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

15. **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.

16. **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.

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

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

19. **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.

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R E S E A R C H   &   S C H O L A R S H I P (continued)
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PRESENTATIONS, POSTERS & INVITED TALKS (UNRELATED TO REFEREED PAPERS)

Azusa Pacific University & University of California, Riverside   **2010-Present**

1. **Namibia Health Informatics Project** – (*Won Outstanding Poster Award*) Accepted poster presented at the APU STEM Research Symposium, Azusa, CA, 2018.
2. **How to Create a Transformational Learning Environment in Your Classroom: Service-Learning Pedagogy Reconsidered** – Accepted talk at the APU Common Day of Learning, 2017.
3. **Printed Circuit Board Design for Digital Microfluidic Biochips** – Accepted poster at the APU Common Day of Learning, 2017.
4. **Namibia Health Informatics Project Progress (NHIP)** – Invited talks presenting NHIP progress to Namibia University of Science & Technology (NUST) vice-chancellor, advisors and to Namibia Ministry of Health & Social Services (MoHSS) officials, 2017.
5. **Namibia Health Informatics Project Plan (NHIP)** – Invited talks presenting NHIP plan to Namibia University of Science & Technology (NUST) vice-chancellor, advisors, 2016.
6. **Potential Connections: APU & Namibia University of Science & Technology (NUST)** – Invited talk presenting microfluidic research and potential areas for collaboration, Windhoek, Namibia (Africa), 2015.
7. **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.
8. **Performing Biochemical Reactions on Digital Microfluidic Biochips** – Invited talk presented to an Azusa Pacific University undergraduate computer science class, Azusa, CA, 2013.
9. **Fast Online Synthesis of Digital Microfluidic Biochips** – Invited talk presented at University of California, Riverside, Computer Science Graduate Colloquium, Riverside, CA, 2013.
10. **Programmable, Integrated Microfluidic Technology: Automated and Miniaturizing Chemistry and Biochemistry** – Tutorial presented at the SIGDA-DAC Design Automation Summer School, Austin, TX, 2013.
11. **System Support for Generally Programmable Digital Microfluidic Biochip Devices** – Poster presented at the NSF CPS Principal Investigator Meeting, National Harbor, MD, 2011.
12. **Programmable Digital Microfluidic Biochips** – Poster presented at the Inland Empire Tech Week Poster Session, San Bernardino, CA, 2010.

FELLOWSHIPS, GRANTS & PATENTS

Academic Fellowships & Financial Awards   **2010-2014**
- National Science Foundation Graduate Research Fellowship (NSF-GRFP), UCR ($90k + tuition)
- UCR Dissertation Year Program Fellowship, UCR ($25k + tuition)
- Design Automation Conference (DAC) Young Student Support Program Award, UCR, ($1k)

Grants   **2016-Present**
- **Connecting Biological Programming Languages to Microfluidic Biochips** – 2017 APU STEM Research Grant, APU ($500, Advisor).
- **Realization of Programmable Digital Microfluidic Biochip** – 2016 APU Faculty Research Grant, APU ($6k, PI).
- **Measuring Physiological Markers of Restorative Landscapes Using Virtual Reality Environments** – 2016 APU Faculty Research Grant, APU ($4k, CI).
- **Virtual Reality for Community Outreach** – 2016 California Space Grant, APU ($2k).

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

Open Source   **2012-Present**
- **Digital Microfluidic Simulator Toolset** – Released simulation and visualization toolsets and source code utilized by researchers around the world (represents 800k+ lines of code)

PROFESSIONAL SERVICE

Namibia Health Informatics Project **2016-Present**
- Led four (4) technical service trips (30+ students) to Namibia, Africa (2016-2019) to present prototype of electronic medical record system to Namibian Government officials
- Created and taught 8 semester-long courses advising students on project progress
- Presented lessons learned and findings in various APU forums and newsletters/publications

Service Learning **2015-Present**
- Served as an APU Service Learning Faculty Fellow (2015-2017) to yield a scholarly approach to successful and systematic academic service learning
- Created the first service-learning course in APU's Department of Engineering & Computer Science
- Pioneered relationships with public schools and afterschool programs in surrounding communities
- Integrated service learning curriculum into Intro Programming courses and facilitated the service of 100s of APU computer science students within local K-12 school environments

STEM Days/Visits **2014-Present**
- Developed workshops and demos for K-12 student groups visiting APU's campus through groups like the Boy Scouts, Azusa Unified School District, etc.
- Served as judge for various science fairs such as the ASCI Science Fair, Re-Imagine Design Contest, etc.

zuVenturez Business Pitch Competition **2017-2019**
- Coached dozens of CS students to compete in APU's zuVenturez business pitch competition

Engineering & Computer Science (ECS) Department
- Selected by Dean and served on 5+ faculty search committees for the Dept. of Engineering & CS
- Pioneered multiple cutting-edge courses and modernized numerous existing courses
- Created technology-focused courses and modified existing ECS courses to obtain GE credit
- Provided substantial guidance in reformulating department's CS curriculum and requirements
- Contributed regular input into department self-evaluations and process to obtain ABET accreditation

AWARDS

Azusa Pacific University
College of Liberal Arts & Sciences (CLAS) **2017**
- 2017 APU CLAS Service Award

PROFESSIONAL MEMBERSHIP

Professional Memberships & Participation **2015-Present**
- ACM Member, UCR/APU
- Computer Science Graduate Student Association (CompGSA) President, UCR
- Tau Beta Pi Invitee/Member, UC
- Eta Kappa Nu Invitee/Member, UC
- Engineering Without Borders Webmaster, UC

PROFESSIONAL DEVELOPMENT

Self Directed Online Courses **2016-Present**
- Machine Learning Crash Course with TensorFlow APIs (Google, 2019)
- Machine Learning (Andrew Ng via Coursera, 2019)
- React Native By Example (Spencer Carli via Handlebar Labs, 2019)
- React Native: Advanced Concepts (Stephen Grider via Udemy, 2017)
- The Complete React Native and Redux Course (Stephen Grider via Udemy, 2017)
- Software Development Process (Georgia Tech via Udacity, 2016)