

**Research Interests:** Operating Systems, Mobile/Embedded Computing, Virtualization, CMOS image sensing

**Education:** **PhD, Computer Science**  
**Columbia University**, New York, NY (September 2010 - Present)

**Master of Science, Computer Science**  
**Columbia University**, New York, NY (February 2011)

**BSE, concentration in Electrical and Computer Engineering /  
Mathematics Minor**  
**Calvin College**, Grand Rapids, MI (May 2003)

**Work Experience:** **Columbia University**, New York, NY, August 2010 – Present  
*PhD Candidate*, Computer Science Department

- Designed and implemented a virtualization architecture for Android smartphones.

**Columbia University**, New York, NY, August 2010 – December 2010  
*Teaching Assistant*, Computer Science Department

- Lead teaching assistant for [COMS W4118](#), Operating Systems, responsibilities included creating new kernel level programming projects on Android.

**Gentex Corporation**, Zeeland, MI, June 2003 - August 2010  
*Senior Electronics Research Engineer*, Advanced Technology Department

- Researched, Designed and implemented innovative CMOS image sensor vision systems for automotive safety applications, responsibilities included CMOS image sensor design/verification, image processing algorithm implementation, data acquisition/visualization.

**Solidus Design**, Grand Rapids, MI, January 2002 - May 2003  
*Web Programmer*

- E-commerce solution design for small start-up using PHP, Perl, PostgreSQL and Apache.

**Electrical Engineering Department**, Calvin College, Grand Rapids, MI  
*Senior Design Project*, September 2002 - May 2003

- Designed an embedded Linux-based stateful firewall on a PCI card using a Motorola Coldfire processor, three independent network interface chipsets, and customized firmware.

**Electrical Engineering Department**, Calvin College, Grand Rapids, MI  
*Research Assistant*, May 2002 - August 2002

- Designed a non-intrusive network monitoring system for Beowulf cluster research.

**Publications:**

- C. Dall, J.C. Andrus, A. Van't Hof, O. Laadan, J. Nieh, "The Design, Implementation, and Evaluation of Cells: A Virtual Smartphone Architecture," *ACM Transactions on Computer Systems (TOCS)*, Volume 30, Issue 3, August 2012
- J.C. Andrus, J. Nieh, "Teaching Operating Systems Using Android," *Proceedings of the 43rd ACM Technical Symposium on Computer Science Education (SIGCSE 2012)* (**Best Paper**)
- J.C. Andrus, C. Dall, A. Van't Hof, O. Laadan, J. Nieh, "Cells: A Virtual Mobile Smartphone Architecture," *Proceedings of the 23rd ACM Symposium on Operating Systems (SOSP 2011)* (**Best Paper**)
- J.C. Andrus, C. Dall, A. Van't Hof, O. Laadan, J. Nieh, "Cells: A Virtual Mobile Smartphone Architecture," *Columbia University Technical Report CUCS-022-11*

**Patents /  
Inventions:**

- J.C. Andrus, T.R. Friend, J.H. Bechtel, Jon; R.R. Turnbull, “Device with Improved Serial Communication,” U.S. Patent [7405650](#).
- J.C. Andrus, T.R. Friend, J.H. Bechtel, Jon; R.R. Turnbull, “Vehicular Communication System Having Improved Serial Communication,” U.S. Patent [7920601](#).
- D. Van Blerkom, J.C. Andrus, J.H. Bechtel, “Imaging Device,” U.S. Patent [8144223](#).
- J.H. Bechtel, J.C. Andrus, “High Dynamic Range Imaging Device”, U.S. Patent [8289430](#).
- J.H. Bechtel, J.C. Andrus, “Imaging Device,” U.S. Patent Application [US20090190015](#).
- J.H. Bechtel, J.C. Andrus, “Imaging Device,” U.S. Patent Application [US20090256938](#).
- J.H. Bechtel, J.C. Andrus, “High Dynamic Range Imaging Device”, U.S. Patent [8305471](#).
- D. Van Blerkom, R. Yassine, J.H. Bechtel, J.C. Andrus, “Imaging Device”, U.S. Patent [8378284](#).
- J.C. Andrus, J.H. Bechtel, T.B. Sherman, “Digital Image Processing and Systems Incorporating the Same,” U.S. Patent Application [US20100195901](#).
- J.H. Bechtel, J.C. Andrus, T.B. Sherman, “Digital Image Processing and Systems Incorporating the Same,” U.S. Patent Application [US20100195908](#).
- J.H. Bechtel, J.C. Andrus, T.B. Sherman, “Digital Image Processing and Systems Incorporating the Same,” U.S. Patent Application [US20100303349](#).
- J.H. Bechtel, J.C. Andrus, G.S. Bush, D.J. Wright, J.L. Schneider, T.B. Sherman, “Automatic Vehicle Equipment Monitoring, Warning, and Control System,” U.S. Patent Application [US20120050074](#).
- J.H. Bechtel, J.C. Andrus, “Imaging Device”, U.S. Patent Application [US20130009042](#).

**Awards:**

- Best Paper Award - SOSIP 2011, “Cells, A Virtual Mobile Smartphone Architecture”
- Best Paper Award - SIGCSE 2012, “Teaching Operating Systems Using Android”
- Columbia University, CS Department, Andrew P. Kosoresow Memorial Award for Outstanding Performance in TA-ing and Service, 2011
- Facebook Fellow, 2012-2013
- Qualcomm Innovation Fellowship Finalist, 2012-2013

**Relevant Skills:**

- Expert in Android OS internals (build system, Linux kernel)
- Expert in CMOS image sensor design, characterization, verification and bring-up
- Expert in C/C++ including STL, threading, and networking (Berkeley sockets, lwIP, low-level Ethernet)
- Expert in cross-platform Qt C/C++ GUI API
- Expert GNU/Linux and Apple OSX operating systems for programming and systems administration
- Expert in shell-scripting, GNU Makefiles
- Proficient in Objective-C and iPhone SDK development
- Proficient in basic image processing algorithms and GPGPU techniques
- Proficient in Perl, HTML, PHP
- Proficient in basic logic design / simulation using Verilog HDL and schematic entry
- Excellent problem-solving and system debugging skills
- Excellent ability to quickly master challenging, complex systems