Kimberly N. Frey, Ph.D.
newmanke@colorado.edu
(301)412-4474 cell

Education and Training:

1999 Ph.D. Electrical and Computer Engineering, Georgia Institute of Technology
1994 M.S. Electrical and Computer Engineering, Georgia Institute of Technology
1993 Student at Georgia Tech Lorraine, Metz, France
1992 B.E.E. Electrical Engineering, Georgia Institute of Technology

1. Professional Experience:

2016- Sr. Research Associate, ECEE, University of Colorado at Boulder
Co-PI on NASA project for monitoring of cloud activity to predict outages and improve the performance of solar energy integration into the grid. Supervised undergraduate and graduate student effort on the integration of microprocessor system with camera and web logging of data. Continue to supervise undergraduate Capstone projects for ECEE department with an emphasis on health and assistive technology. Developing new material for FPGA course to launch on the MOOC platform with an emphasis on video systems. Pursuing funding to transfer innovations to market both internally at CU and externally through private and federal sources.

2014-Sr. Design Engineer, Video Accessory Corporation, Longmont, CO
Design embedded solutions for Video Scaling using the Altera VIP suite. Created HW/SW interfaces in the NIOS II development environment using C/C++. Developed solutions for web based control of video switches using the PIC 32 MLA with both telnet and HTTP2 servers. Investigating methods for transmission of H264 encoded video over Ethernet. Supporting the IT infrastructure of the company by maintaining the servers for the internal database and file storage. Generate internal software documentation and participate in development meetings with customers both on site and off site.

2013- Research Associate, ECE Engineering, University of Colorado at Boulder
Supervising the research of graduate and undergraduate students in the area of biomedical devices and smart grid as it pertains to solar forecasting. Member on PhD thesis committee and coadvisor on BIO topics as well as some Energy topics. Continuing to further knowledge and experience in design of embedded systems that utilize FPGAs as well as smart phones and microcontrollers. Instructing my students individually as well as in groups as needed in the previously mentioned technologies. Serving as webmaster for Distinguished Prof. Frank Barnes and advisor for DLA and capstone teams as necessary.

2012-2013 ORISE Fellow, Functional Performance and Device Use Lab, Division of Physics, OSEL/CDRH, Food and Drug Administration
Configuring smart hospital room for individuals with limited mobility after traumatic injury using off the shelf components for access to room controls and communication with care providers. Learning the regulatory process as well as developing a network for usability studies both locally in D.C. as well as continuing ties to Denver Health Medical Center for local evaluation of the system components.

2012-2013 NSF Scholar in Residence, Wireless and EMC Lab, Division of Physics, OSEL/CDRH, Food and Drug Administration
Characterizing the RF channel from body worn medical devices to smart phones for home based chronic illness management. Evaluation of Zigbee, Bluetooth, and WiFi for application is underway as well as

characterization of the cellular communication to the base station.

2010-2011 Research Associate, ECE Engineering, University of Colorado at Boulder
Supervised research of graduate and undergraduate students in the areas of biomedical monitoring and smart grid. Prepared articles for conferences and journals. Submitted proposals for funding of activities. Trained students on presentation skills for IEEE conferences. Interacted with editors for journals in the Power Society to ensure articles are aligned with publication interests. Participated in workshops organized by NREL, and RASEI. Initiated discussions with NextStep Electric for research collaboration. Received an adjunct appointment at UCCS with the Engineering Department for biomedical research. Supervised student efforts to install a system for active fall monitoring in Palisades Assisted Living Community in Colorado Springs. Continued efforts with Denver Health Medical Center and registered with CCTSI for funding opportunities in biomedical monitoring. Received IRB approval for human subject research. Guided students through this process. Working through patent filing and commercialization for fall monitoring system.

2009-2010 Assistant Professor Adjunct, ECE Engineering, University of Colorado Boulder

Taught classes at the undergraduate and graduate level in Digital Logic and Hybrid Embedded Systems. Prepared new laboratory experiments for Hybrid Embedded Systems. Provided training for students to complete projects in Digital Logic and created new homework sets. Supervised graduate teaching assistants. Worked with industry vendor to obtain details on HW/SW and received donations to support student efforts. Supervised Capstone Design Team in biomedical monitoring project. Recruited students for research projects and supervised efforts on Microsoft Design Competition. Guided independent study efforts.

2002-2009 Assistant Professor, Department of Engineering, University of Denver
Developed program in Computer Engineering as one of three faculty in the department. Focused on the creation of courses and labs for microcontrollers and FPGAs for both undergraduate and graduate level instruction. Advised students on course selection for technical concentration and capstone projects. Mentored graduate teaching assistants in my classes as well as the combined project curriculum classes at the junior and senior year. Developed course in introductory Computer Engineering for freshman engineering students from Electrical, Computer, and Mechanical Engineering. Advised thesis preparation of master's level students. Served on committee for evaluation of ABET criteria for Computer Engineering program as well as the overall University assessment program. Served as the representative to the Senate for the Electrical and Computer Engineering Department. Developed proposals to national funding agencies as well as internal and State sources of funding. Managed funded proposals in the amount of $997,000 over seven years. Presented papers at local, national, and international venues.

2000-2001 Assistant Professor, Department of Electrical Engineering, Rochester Institute of Technology
Revamped the Digital Logic laboratory to use FPGA devices. Developed a class in High Speed Digital Design and advised senior design projects. Worked with graduate students on research projects and presented papers at conferences. Prepared proposals for internal review and networked with funded faculty at University of Rochester.

1999-2000 Visiting Assistant Professor, Computer Engineering, Georgia Tech Regional Engineering Program, Savannah, GA, Georgia Institute of Technology
Founded the labs for the undergraduate program in Computer Engineering during the first semester offerings of these courses. Taught classes in DSP First and Digital Design in coordination with the faculty in Atlanta. Submitted conference papers and developed proposals.

2. Peer Reviewed Publications: (faculty in bold, student authors in bold italics)

Check link below for access to articles that are uploaded as well as stats on citations.
https://www.researchgate.net/profile/Kimberly_Frey2/stats

Patent Awarded:

Inspection system and method for bond detection and validation of surface mount devices
Patent · October 1999 Patent: 5,963,662

Book Chapter:

***Niket Shah*, *Maulik Kapuria*, and Kimberly Newman**, Activity Recognition in Pervasive Intelligent Environment, Chapter 13: Embedded Activity Monitoring Methods, Atlantis Press Book, pp. 289-309.

Select Published Journals:

"Use of Wavelet Transform to Detect Compensated and Decompensated Stages in the Congestive Heart Failure Patient," **Pratibha Sharma[1]**, **Kimberly Newman[2]**, Senior member, IEEE, Dr. Carlin S. Long[3], Cardiologist, Denver Health Medical Center, A.J. Gasiewski[4] and Frank Barnes[5], Fellow, IEEE (accepted with major revisions)

Kimberly Newman and Michael Blei, "Evaluation of Smart Phones for Remote Control of a Standard Hospital Room," Springer Wireless Personal Communication, accepted for publication August 29, 2013.

Frank Agyei-Ntim, ***Kimberly Newman***, "Lifetime Estimation of Wireless Body Area Sensor Networks Using Probabilistic Analysis," Springer Wireless Personal Communication. published online March 2012.

Newman, K.. "FPGA Based System for Open, Short, and RC Impedance Measurement," *IEEE Transactions on Advanced Packaging*, February 2010, vol 33, issue 1, pp. 147-152.

Newman, K.E., Hamblen, J.O., and Hall, T.S., "An Introductory Digital Hardware Laboratory Using a Low-Cost Autonomous Robot," *IEEE Transactions on Education*, vol. 45, n. 3, August 2002: 289-296.

--- Advisor Roles ---

PHD thesis
Pratibha Sharma - finished working at AT&T currently and seeking academic position
Ali Elhouderhi - in progress (was on Lybian scholarship but now working local)
John Locke - on hold due to family medical issues was investigating bluetooth for FDA project
Omkar Pradhan - transferred advisors after I returned from FDA due to funding ending

MS thesis
Sharmisha Maitra - completed MS thesis at DU
Shounak Mitra - completed MS thesis at DU worklng locally in Colorado
Frank Agyei-Ntim - completed MS at DU and current CU Bioengineering Ph.D. candidate
Nikolai Semenov - did not complete MS at DU and returned to Russia
Jesus Apodaca Madrid - did not complete MS and probably had to return to Mexico