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# Secure and Compressive Acquisition for Telemedicine Applications

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The rapid growth in sensing and monitoring in medical care demands acquiring and analyzing a large amount of data. At the same time, advances in nanometer electronic systems, compressive sensing based information process and cloud computing technologies have empowered us with great potentials in high speed data analysis. The grand challenge for modern data acquisition system is therefore how to effectively extract useful information at high rates using a vast amount of signals/data. Over the past several years, great efforts have been invested into analog-to-information converter (AIC) to acquire raw sample at a low rate while accurately reconstructing the compressed signals. However, it is not known how these new developments would bring changes to telemedicine. The key components under investigations were analog-to-digital converters, random filtering, demodulations and efficient cyber security designs. Little has been revealed on how to build circuits that can create "good" measurement matrix. We believe that "good" quality not only refers to effective selection matrix but also includes circuit implementation cost (i.e. power and area consumptions), as well as the cost on secure measurement data. Not to mention that the existing works also neglect the fact that the high complexity in the reconstruction algorithms demand high performance computing facilities.

## Biography

Janet Roveda received a B.S. degree in Computer Science from The East China Institute in 1991, M.S., and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California, Berkeley in 1998 and 2000, respectively. She was a recipient of the NSF career award and the PEACASE award in 2005 and 2006, respectively. She received the best paper award in ISQED 2010 as well as best paper nominations in ASPDAC 2010, ICCAD 2007, and ISQED 2005. She is the recipient of the 2008 R. Newton Graduate Research Project Award from DAC, and the 2007 USS University of Arizona Outstanding Achievement Award. Her primary research interests focus on robust VLSI circuit design for data acquisition, biomedical instrument design, VLSI circuit modeling and analysis, and low power multi-core system design.

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