Biography

Richard G. Baraniuk grew up in Winnipeg, Canada, the coldest city in the world with a population over 600,000 (more). He received the B.Sc. degree in 1987 from the University of Manitoba, the M.Sc. degree in 1988 from the University of Wisconsin-Madison, and the Ph.D. degree in 1992 from the University of Illinois at Urbana-Champaign, all in Electrical Engineering. In 1986, he was a research engineer with Omron Tateisi Electronics in Kyoto, Japan. While at the University of Illinois, he held a joint appointment with the CERL Sound Group and the Coordinated Science Laboratory. After spending 1992-1993 at Ecole Normale Supérieure in Lyon, France, he joined Rice University in Houston, Texas, where he is currently the Victor E. Cameron Professor of Engineering and a sporadic DJ for KTRU. He spent a sabbatical at Ecole Nationale Supérieure de Télécommunications in Paris in 2001 and Ecole Fédérale Polytechnique de Lausanne in Switzerland in 2002.

Signal Processing

Dr. Baraniuk's research interests lie in the areas of signal, image, and information processing and include machine learning and compressive sensing. Previously, he has worked in multiscale natural image modeling using wavelet-domain hidden Markov models and time-frequency analysis. Some recent press on the single-pixel, compressive sensing camera is available here. His research has been funded by NSF, DARPA, ONR, AFOSR, AFRL, ARO, DOE, NGA, EPA, NATO, the Texas Instruments Leadership University Program, and several companies. He serves as Project Director for the ARO MURI on Opportunistic Sensing and the DARPA A2I Receiver Program.

He has been a Guest Editor of special issues for the *IEEE Signal Processing Magazine* on "Signal Processing and Networks" in 2002 and "Compressive Sampling" in 2008 and for the *Proceedings of the IEEE* on "Educational Technology" in 2008. He is currently an Associate Editor for the *ACM Transactions on Sensor Networks* and *Applied and Computational Harmonic Analysis*. He served as Co-Technical Program Chair for IEEE Statistical Signal Processing Workshop in 2007 and has served on several other conference technical program committees including IPSN, ICIP, ICASSP, and SPIE. He is a member of the DARPA Information Science and Technology (ISAT) Study Group.

Open Education and Connexions

Dr. Baraniuk is Director of Connexions, a non-profit publishing project he founded in 1999 to bring textbooks and learning materials into the Internet Age. Connexions makes high-quality educational content available to anyone, anywhere, anytime for free on the web and at very low cost in print by inviting authors, educators, and learners worldwide to "create, rip, mix, and burn" textbooks, courses, and learning materials from its global open-access repository. Each month, Connexions' free educational materials are used by over 2 million people from nearly 200 countries. His career apogee was probably opening for Peter Gabriel at TED 2006 (talk). His signal processing materials in Connexions have been viewed over 5 million times. Since 2002, Connexions has been supported by the William and Flora Hewlett Foundation, the Maxfield Foundation, NSF, and Rice University. Some recent press on Connexions is available here, including a CNN.com article, NY Times Editorial, and op-ed piece. His Connexions author profile page is here.

Currently, he is developing advanced machine learning algorithms and a software platform for a personalized learning system (PLS) that integrates text, video, simulations, problems, feedback hints, and tutoring and optimizes each student's learning experience based on their background, context, and learning goals. This work is being partially funded by Google through their Research Awards program.

Awards and Honors

2012
SPIE Compressive Sampling Pioneer Award

2011
WISE Education Award for Connexions

2010
IEEE Signal Processing Society Education Award

2009
Fellow of the American Association for the Advancement of Science (AAAS)
IEEE Signal Processing Society Magazine Column Award
World Technology Award for Education

2008
Internet Pioneer Award, Berkman Center for Internet and Society at Harvard U.
SPIE Wavelet Pioneer Award

2007
Edutopia Magazine's "Daring Dozen" Education Innovators
MIT Technology Review TR10 Top 10 Emerging Technology for Single-Pixel Camera
Hershel M. Rich Invention Award (Rice)

2006
Tech Museum of Innovation Laureate for Connexions
George R. Brown Award for Superior Teaching (Rice)

2003

Co-Author on Passive and Active Measurement Workshop Student Paper Award (with V. Ribeiro, R. Riedi, J. Navratil, and L. Cottrell)
George R. Brown Award for Superior Teaching (Rice)

2002

Fellow of the Institute of Electrical and Electronic Engineers (IEEE)

2001

Co-Author on IEEE Signal Processing Society Junior Paper Award (with M. Crouse and R. Nowak)
IEEE NORSIG Best Paper Award (with E. Monsen, J. Odegard, H. Choi, J. Romberg)
George R. Brown Award for Superior Teaching (Rice)

2000

University of Illinois ECE Young Alumni Achievement Award
Charles Duncan Junior Faculty Achievement Award (Rice)

1999

C. Holmes MacDonald National Outstanding Teaching Award (Eta Kappa Nu)

1998

Rosenbaum Fellowship, Isaac Newton Institute (Cambridge University)

1995

ONR Young Investigator Award

1994

NSF National Young Investigator Award

1992

National Sciences and Engineering Research Council of Canada NATO Postdoctoral Fellowship

1987

Wisconsin Alumni Research Foundation Fellowship Bacon Scholarship
Eta Kappa Nu Award for Second-Ranked Graduating Electrical Engineer (U. Manitoba)
IEEE Award for Best Undergraduate Thesis Defense (U. Manitoba)

1986

E. P. Fetherstonhaugh Scholarship (U. Manitoba)

1977

Top Project at the University of Winnipeg Science Symposium (Provincial Science Fair)