

# Data Analytics Challenges in Biomedical Engineering

**Donald C. Wunsch II**, Ph.D. EE, MBA  
Mary K. Finley Missouri Distinguished Professor  
Missouri University of Science & Technology  
Dept. of Electrical and Computer Engineering  
Rolla MO 65409 USA

## ABSTRACT

Biomedical engineering applications are now generating data at a rate that is increasing even faster than Moore's Law, just as that Law has come to an end. Thus it is incumbent on those who design intelligent computing techniques to compensate for the bottleneck that results. This provides amazing challenges and opportunities for researchers in this fast-growing field.



Donald Wunsch is the Mary K. Finley Missouri Professor of Computer Engineering at Missouri University of Science and Technology. His expertise and training is in neural networks and other areas of computational intelligence, coupled with experience working with biological collaborators on large-scale genomics and biomedical engineering projects. This experience includes applications such as cancer diagnostics and prognostics, microarray data analysis, cell signaling and genetic regulatory networks, epilepsy onset prediction, neural spike sorting, multidisciplinary bioinformatics research, image analysis, automated depression and other mental health assessment, autism research, interpersonal relations assessment, automated ethics analysis,

medical literature analysis, risk assessment, human-machine interfaces, explanation capabilities of automated reasoning systems, biomedical instrumentation, theories of learning, theories of motivation and addiction, neural network modeling and more. He has produced 18 Ph.D. recipients in Computer Engineering, Electrical Engineering and Computer Science, and is supervising eight additional Ph.D. Candidates in these fields as well as Systems Engineering. He is also supervising a Fulbright Fellow and two sabbatical faculty visitors. He is an IEEE Fellow, International Neural Networks Society (INNS) Fellow, former INNS President and Senior Fellow, and recipient of an NSF CAREER Award, the Halliburton Award for Excellence in Teaching and Research, the 2015 INNS Gabor Award and the 2016 Missouri University of Science and Technology Faculty External Recognition Award.