

# *Biometric Consortium 2004 Conference*

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**Topic:** Multi-Modal Fusion

**Abstract:** When and why does multi-modal fusion make sense? What are some of the research and development challenges in multi-modal fusion?

**Biography:** Douglas Reynolds received his B.E.E. degree in 1986 and his Ph.D. degree in 1992 both from the Georgia Institute of Technology. During the summers of 1989 and 1991, he was a summer staff member of the Information Systems Technology Group (formerly known as the Speech Systems Technology Group) at MIT Lincoln Laboratory, where he conducted research in speaker recognition, developing the use of Gaussian mixture models (GMMs) for text-independent speaker representations. Doug joined the Information Systems Technology Group as a Member of Technical Staff in 1992 where he conducted research in the areas of robust speaker recognition (identification and verification), transient classification and robust speech representations for recognition. During this period he invented and developed several widely used techniques in the area of speaker recognition, such as robust modeling with GMMs, application of a universal background model to text-independent recognition tasks, the use of Bayesian adaptation to train and update speaker models, fast scoring techniques for GMM based systems, the development and use of a handset/channel-type detector, and several normalization techniques based on the handset/channel-type detector. In the summer of 2002, Doug lead the SuperSID project at the JHU Summer Workshop (<http://www.clsp.jhu.edu/ws2002/groups/supersid>) where new approaches to exploiting high-level information for improved speaker recognition was explored. These and other ideas have been implemented in the Lincoln speaker recognition system which has won several annual international speaker recognition evaluations conducted by the National Institute of Standards and Technology (NIST) (<http://www.nist.gov/speech/tests/spk>). Research into combining robust speaker verification with other forms of authentication for highly secure information and/or account access has resulted in two pending patents. In 1998, Doug was appointed to the position of Senior Member of Technical Staff where he provides technical oversight of the Lincoln speech projects in speaker and language recognition and speech-content based information retrieval. Current research in the area of speaker recognition is focused on application of recognition techniques to multi-speaker speech and improving the performance of recognition systems under mismatched channel conditions. Doug is a senior member of the IEEE, has served on the IEEE Signal Processing Society's Speech Technical Committee.