About the Contributors

**John Mullennix** is a Professor of Psychology at the University of Pittsburgh at Johnstown. He received a B.S. in Psychology from the University of Pittsburgh and a Ph.D. in Psychology from SUNY-Buffalo. His area of research encompasses speech perception, psycholinguistics, and speech technology. He has numerous scholarly publications in the areas of psychology and speech & hearing and has received federal research funding for his work on speech perception. Currently, he is working on research projects related to earwitness testimony and the attitudes toward users of computerized speech technology.

**Steven Stern** is a Professor of Psychology at the University of Pittsburgh at Johnstown. He received a B.A. in Psychology from Clark University and a Ph.D. in Psychology from Temple University. He is one of a small group of psychologists who study the social psychological implications of technology. He has published several articles on how technologies affect how people view themselves and with each other. As well as examining how people react toward assistive technologies, he is currently studying how cellular telephones alter interpersonal communication and peoples’ relationships.

* * *

**Pierre Badin** is a senior CNRS Research Director at the Speech and Cognition Department, GIPSA-lab, Grenoble. Head of the ‘Vocal Tract Acoustics’ team from 1990 to 2002, associate director of the Grenoble ICP from 2003 to 2006, he is adjunct to the Department head since 2007. He has worked in the field of speech communication for more than 30 years. He gained international experience through extended research periods in Sweden, Japan and UK, and is involved in a number of national and international projects. He is associate editor for speech at *Acta Acustica*, and reviewer for many international journals. His current interest is speech production and articulatory modelling, with an emphasis on data acquisition, development of virtual talking heads for augmented speech, and speech inversion.

**Gérard Bailly** is a senior CNRS Research Director at the Speech and Cognition Department, GIPSA-lab, Grenoble. He is now the head of the department. He has worked in the field of speech communication for more than 25 years. He supervised 20 PhD Thesis and authored 32 journal papers and more than 200 book chapters and papers in major international conferences. He coedited “Talking Machines: Theories, Models and Designs” (Elsevier, 1992) and “Improvements in Speech Synthesis” (Wiley, 2002). He is the associate editor for the Journal of Acoustics, Speech & Music Processing and reviewer for many international journals. He is a founder member of the ISCA SynSIG and SproSIG special-interest groups. His current interest is multimodal and situated interaction with conversational agents using speech, facial expressions, head movements and eye gaze.
Denis Beautemps is a CNRS Researcher at the Speech and Cognition Department, GIPSA-lab, Grenoble. He has worked in the field of speech communication for more than 10 years. He is now the head of the ‘Talking Machine, Communicants agents, Face to Face interaction’ team. His current interest is multimodal and supplemented speech, fusion of multi components as it has been the case in the Cued Speech modelling.

H. Timothy Bunnell received his Ph.D. in Experimental Psychology from The Pennsylvania State University in 1983. From 1983 until 1989 he was a Research Scientist at Gallaudet University studying speech enhancement and speech perception by deaf and hard of hearing individuals. Since 1989, Dr Bunnell has directed the Speech Research Laboratory at the duPont Hospital for Children and held research faculty appointments in the Departments of Linguistics and Computer and Information Sciences at the University of Delaware. Currently, Dr. Bunnell is the director of the Nemours Center for Pediatric Auditory and Speech Sciences. His research interests are in speech perception, speech synthesis, speech recognition and the application of speech technologies to the diagnosis and treatment of hearing and speech disorders in children and adults. With his colleague Irene Vogel, he is the Co-Editor of the journal Language and Speech.

Jeff Chaffee is a speech-language therapist with the Easter Seals Society of Mahoning, Trumbull, and Columbiana Counties in Youngstown, OH. He received his B.S. in speech-language pathology from Clarion University of Pennsylvania, and his M.S. in speech-language pathology from Indiana University of Pennsylvania. He has practiced in both in- and outpatient settings, working with children and adults, and recently was asked to lead expansion into a long-term acute care hospital for Easter Seals. This chapter is his first publication, and he dedicates it to his wife Kelli and son Sean. Currently, he is pursuing development of an “Augmentative Communication Specialist” position with Easter Seals and is preparing for trials with a new AAC client who may be a candidate for eye gaze technology.

Sarah Creer is a PhD student in the Clinical Applications of Speech Technology (CAST) group at the University of Sheffield, UK, working on personalizing synthetic voices for individuals with progressive speech loss. She received a BA (Hons) degree from the University of York, UK, and an MSc in Speech and Language Processing from the University of Edinburgh, UK. Before starting her PhD, she worked at the University of Reading, UK, on the compilation of the BASE (British Academic Spoken English) corpus.

Stuart Cunningham received a BEng in Software Engineering and PhD in Computer Science from the University of Sheffield. His PhD was concerned with modelling the recognition of filtered speech using missing data techniques, and continued these investigations as a Research Associate at the University of Sheffield. In 2002 he joined the Medical Physics and Clinical Engineering department at Barnsley Hospital to work on the development of speech recognition for people with severe speech impairment. Subsequently he assumed his current position as a lecturer in the Department of Human Communication Sciences at the University of Sheffield. His primary research interests are in clinical applications of speech technology, robust speech recognition, and the perception of speech in adverse conditions. He is currently a co-investigator on two projects funded by the National Institute for Health Research on the development of speech recognition for people with speech impairment.
**About the Contributors**

**James Dembowski** is an assistant professor at Texas Tech University Health Sciences Center. He received his graduate education at the University of Texas at Dallas, and at the University of Wisconsin – Madison. He is a speech pathologist with a clinical background in augmentative communication, as well as in neurogenic speech-language disorders, stuttering, and voice disorders. His research interests focus on acoustic and articulatory phonetics in both normal and disordered speakers, and the physiology of voice production. His most recent research projects have focused on cross-linguistic acoustic patterns of consonant production in English and Japanese speakers. He is also interested in the application of laboratory technology to clinical practice, particularly the use of acoustic analysis. Currently, he is working on projects which attempt to apply acoustic analysis to the differential diagnosis of motor and language deficits in aphasic speakers.

**Kathryn Drager**, Ph.D., CCC-SLP, is an Associate Professor in the Department of Communication Sciences and Disorders at the Pennsylvania State University in Pennsylvania, USA. Her research interests include augmentative and alternative communication (AAC) and applications for young children, beginning communicators, and children with autism, listeners’ comprehension of speech output, and assessment and intervention for individuals with severe disabilities with challenging behaviors. She is involved in a series of multidisciplinary collaborative research projects designed to enhance language development for beginning communicators who require AAC; enhance the communicative competence of people who require AAC; and improve the design of AAC technologies for individuals with significant speech and motor impairments. Dr. Drager serves as an Associate Editor for *Augmentative and Alternative Communication*. She teaches undergraduate and graduate courses in Augmentative and Alternative Communication, graduate courses in Swallowing Disorders, and undergraduate and graduate courses in Autism.

**Frédéric Elisei** is a CNRS Research Engineer at the Speech and Cognition Department, GIPSA-lab, Grenoble. He is responsible for the development and exploitation of the MICAL experimentation platform, designed to study multimodal face-to-face speech communication. He works on audiovisual speech i.e. modelling and synthesis of 3D talking heads, addressing several speakers and target languages. His current interest is multimodal and situated interaction with conversational agents, in particular giving agents adaptive skills such as varying speech styles (whisper, hyper-articulation...), displaying various facial expressions or adapting the language or the phonological repertoire to the human interlocutor.

**Ashley Davis Fortier** completed her B.S. in psychology from the University of Pittsburgh at Johnstown in 2005. Currently, she works in Maryland for the Medicaid Older Adult Waiver and Money Follows the Person Initiative.

**Phil Green** founded the Speech and Hearing group at the University of Sheffield in 1985. He has around 80 publications in topics ranging from Automatic Speech Recognition to Auditory Scene Analysis and Speech Perception and has coordinated a number of major research grants in these areas. Besides clinical applications of speech technology he is currently researching robust recognition techniques based on sound source separation.

**Jeff Higginbotham**, Ph.D is a Professor and Director of the Communication and Assistive Device Laboratory in the Department of Communicative Disorders and Sciences and State University of New
York at Buffalo. At UB, Dr. Higginbotham teaches courses in AAC and research design. A partner in the RERC on Communication Enhancement, Dr. Higginbotham’s research focuses interactions in real-time and how AAC technologies can be designed to improve conversational performance. He has received federal research funding for his work in augmentative communication and assistive technology. Dr. Higginbotham also consults with industry on the design and development of augmentative communication devices.

**Rajinder Koul** earned his doctorate in speech-language pathology at the Purdue University. He is a speech-language pathologist, having received his undergraduate and master’s degree in speech and hearing sciences in India. He is now professor and Chairperson in the Department in the Department of Speech, Language, and Hearing Sciences at the Texas Tech University Health Sciences Center-Lubbock. He also serves as the Associate dean (Research) for the School of Allied Health Sciences. Dr. Koul received 2001 Mary E. Switzer Distinguished Fellowship from the National Institute on Disability and Rehabilitation Research. In 2005, he was named a Fellow of the American Speech-Language—Hearing Association. Dr. Koul is the author of research publications and book chapters concerning augmentative and alternative communication (AAC) and developmental and acquired communication impairments. His research work has focused on understanding the factors that influence perception of synthetic speech in persons with developmental disabilities and on evaluating the efficacy of AAC intervention in persons with aphasia.

**Giulio E. Lancioni** received his Ph.D. in Child Development and Psychology from the University of Kansas. He is Professor at the Department of Psychology, University of Bari, Italy. Prior to this position, he spent many years at the Department of Psychology, University of Leiden, The Netherlands. His research interests include development and assessment of assistive technologies, training of social and occupational skills, and evaluation of strategies for examining preference and teaching choice in individuals with severe/profound and multiple disabilities. He has published widely in these areas and serves in the editorial board of several international journals concerned with these topics.

**Pearl Langan** works as a speech and language therapist with a specialist service for children and adolescents with mental health difficulties. She graduated with an honors BSc from Trinity College Dublin, where her dissertation focused on comparisons of aided communication systems from ‘insider’ and ‘outsider’ perspectives. She continues to maintain her interest in research in speech and language therapy, particularly as it relates to the development of language and communication skills.

**Eduardo Lleida** is a Professor of the Department of Electronical Engineering and Communications at the University of Zaragoza in Zaragoza, Spain. He received a B.Sc. and Ph.D. in Telecommunication Engineering from the Polytechnic University of Catalonia in Barcelona, Spain. His area of research covers all elements related to the acoustics, from noise and echo cancellation in automotive environments to acoustic modeling in advanced speech recognition or speaker verification systems. His research has led to many publications in international conferences and journals in the field of speech technologies.

**Janice Murray** is head of speech pathology and therapy at Manchester Metropolitan University, UK. Her first degree was in speech and language therapy and her Doctorate explored language development in children with cerebral palsy and limited speech intelligibility. She has developed a centre
of excellence focusing on the research, education and service users needs in the field of augmentative and alternative communication (AAC). Her research interests include atypical language development, memory and its impact on aided language use, and personal histories of adults who use AAC. She has published in these areas. The educational and professional development of speech and language therapy students remains a keen focus of her work and she is particularly interested in the development of interprofessional learning opportunities for health and educational professionals.

Mark F. O’Reilly received his Ph.D. in Special Education from the University of Illinois at Urbana-Champaign in 1992. He is Professor of Special Education and the Mollie Villeret Davis Endowed Professor in Learning Disabilities at the University of Texas at Austin. His research focuses on the assessment and treatment of challenging behavior, communication and social skills interventions, and assistive technology with individuals with low incidence disabilities.

Christopher A. Pennington has over 20 years of research and software development experience in augmentative communication, computational linguistics and assistive technology. Formerly research staff at the University of Delaware, he is now a project coordinator and research developer at AgoraNet, Inc., a small company in Newark, Delaware that specializes in custom software and web development. Chris is currently coordinating the AgoraNet team that is commercializing the ModelTalker speech system software. He has also recently worked with projects investigating word prediction and customizing graphics for language representation.

Diana Petroi is a speech-language pathologist and a doctoral student in communication sciences and disorders at Texas Tech University Health Sciences Center. She is interested in neurologically based communication disorders.

Joe E. Reichle is a Professor in the Department of Speech-Language-Hearing Sciences and the Department of Educational Psychology at the University of Minnesota, USA. Currently he is Co-PI on a subcontract for an IES clinical trial examining the efficacy comprehensive curricula for preschoolers with ASD. Dr. Reichle has published over 55 articles in the area of augmentative and alternative communication and challenging behavior in rigorous refereed journals. He has been Associate Editor for the Journal of Speech Language and Hearing Research and Augmentative and Alternative Communication. His current research focuses on examining parameters of intervention intensity and procedural fidelity in translating experimental research into educational applications for preschoolers with autism spectrum disorders. Dr. Reichle directs the Autism Certificate Program at the University of Minnesota and is Co-PI of the Minnesota LEND interdisciplinary Leadership Training Grant in Neurodevelopmental Disorders. He is a Fellow of the American Speech Language and Hearing Association.

Victoria Rodriguez is a teaching member of Spanish as a foreign language in the Romance Language Department at the Vienna International School in Vienna, Austria. She has long term experience in teaching Spanish as a second language to secondary students in a multilingual environment. Her professional interest focuses in the development and testing of new pedagogical and multimedia tools to improve the oral skills of students learning one or more foreign languages.
W.-Ricardo Rodríguez is an assistant researcher at the University of Zaragoza in Zaragoza, Spain. He received a B.Sc. in Biomedical Engineering from the Corporación Universitaria de Ciencia y Desarrollo and the Universidad Distrital Francisco José de Caldas in Bogotá (Colombia) and a M.Sc. in Biomedical Engineering by the University of Zaragoza. His area of research gathers the study of acoustic and articulatory features in young children’s speech for the development of speech therapy tools.

Debbie Rowe is a doctoral candidate in Rensselaer Polytechnic Institute’s Communication and Rhetoric program. As both a Humanities, Arts, and Social Sciences Fellow and a Joanne Wagner Memorial Fellow at the university, she has pursued research in the application of text-to-speech technology to the field of composition, specifically to the practices of editing, and proofreading. She is currently wrapping up her dissertation research, documenting how experienced writers use reading aloud to themselves as a mode of revision, and what role text-to-speech technology can play during that process. As a former Information Technology manager in the non-profit sector, she applies her knowledge of technology, written composition, and communication in classrooms and volunteer venues in New York and South Korea.

Oscar Saz is an assistant researcher at the University of Zaragoza in Zaragoza, Spain. He received a B.Sc. and M.Sc. in Telecommunications Engineering from the University of Zaragoza. His area of research gathers the personalization of speech technology-based systems like Automatic Speech Recognition and speech assessment to speech variants like disordered or non-native speech. He is also interested in the application of this knowledge to the development of speech-based tools for the handicapped.

Ralf W. Schlosser received his Ph.D. in Special Education from Purdue University in 1994. He has held Research Director/Clinical positions at the Oklahoma Assistive Technology Center in Oklahoma City and Bloorview MacMillan Centre in Toronto. His current appointment is Professor in and Chair of the Department of Speech-Language Pathology and Audiology at Northeastern University in Boston, U.S.A. He also has a joint appointment in the School Psychology Program of the Department of Counseling and Applied Educational Psychology at Northeastern and serves as Director of Clinical Research at the Communication Enhancement Center of Children’s Hospital Boston at Waltham. He teaches in the areas of research methods, evidence-based practice and augmentative and alternative communication (AAC). His research focuses on AAC intervention for children with developmental disabilities in general and autism in particular. He serves on several editorial boards and is co-editor-in-chief of Evidence-based Communication Assessment and Intervention.

Jeff Sigafoos received his Ph.D. in Educational Psychology from The University of Minnesota in 1990. He has held academic appointments at The University of Queensland, University of Sydney, and the University of Texas at Austin. His current appointment is Professor in the School of Educational Psychology and Pedagogy at Victoria University of Wellington, New Zealand. He teaches in the areas of educational psychology and developmental disabilities. His research focuses on communication intervention for individuals with developmental and physical disabilities. He has co-authored numerous intervention studies related to teaching individuals with developmental disabilities. He serves on several editorial boards and is co-editor-in-chief of Evidence-based Communication Assessment and Intervention and editor of Developmental Neurorehabilitation.
About the Contributors

**Martine Smith** is Senior Lecturer in Speech Language Pathology in Trinity College Dublin. She has worked clinically as a speech and language therapist with children and adults with a range of communication difficulties, including severe speech and physical impairments. Her research interests and publications are primarily in the areas of language acquisition in exceptional circumstances, the impact of augmentative and alternative communication on language acquisition and social functioning across the lifespan, and links between spoken and written language. She is a Past President of the International Society for Augmentative and Alternative Communication (ISAAC) and has a particular interest in multidisciplinary research and intervention.

**Elizabeth Steinhauser** completed her B.S. in psychology from the University of Pittsburgh at Johnstown in 2006. In 2008, Elizabeth completed her M.S. in Industrial/Organizational Psychology from the Florida Institute of Technology. Currently, she is pursuing her doctorate degree in Industrial/Organizational Psychology from Florida Institute of Technology and working as a contractor at the Defense Equal Opportunity Management Institute. Her current research interests include employment law and affective experiences in the workplace.

**Dean Sutherland**, Ph.D., is a Lecturer in the Health Science Centre at the University of Canterbury, Christchurch, New Zealand. He teaches AAC, child development, and early intervention. Dr. Sutherland received his PhD in speech-language therapy from the University of Canterbury in 2006. His research interests include AAC intervention for children and adults with complex communication needs and phonological development in young children with severe speech impairments. He is also interested in the role of families in early intervention for children who experience developmental disabilities. Dr. Sutherland is an executive board member of the New Zealand Speech-language Therapists Association.

**Carlos Vaquero** is a teaching assistant at the University of Zaragoza in Zaragoza, Spain. He received a B.Sc. and M.Sc. in Telecommunications Engineering from the University of Zaragoza in Zaragoza, Spain. His area of research has covered the development of speech therapy tools for the handicapped and now is oriented to the study of the acoustic part in speaker verification and speaker recognition systems.


**Stephen von Tetzchner** is professor of developmental psychology at the Department of Psychology, University of Oslo, Norway. He has worked both academically and clinically with children having a range of disabilities, including children with motor impairment, intellectual impairment, deafness, blindness, Rett syndrome, Tourette syndrome, autism and Asperger syndrome. His research includes issues related to typical and atypical development in general, and communication and language devel-
development in particular, including the development of children who fail to acquire spoken language in the normal manner and may need intervention with an on-speech communication form. He has addressed communication and language from a developmental perspective, with a focus on understanding the transactional processes that govern typical and atypical development. He has published textbooks on developmental psychology, signed and spoken language development, augmentative and alternative communication, habilitation, challenging behavior and Asperger syndrome.

**Junichi Yamagishi** received the B.E. degree in computer science, M.E. and Ph.D. degrees in information processing from Tokyo Institute of Technology, Tokyo, Japan. He pioneered the use of speaker adaptation techniques in HMM-based speech synthesis in his doctoral dissertation ‘Average-voice-based speech synthesis’, which won the Tejima Doctoral Dissertation Award 2007. He held a research fellowship from the Japan Society for the Promotion of Science (JSPS) 2004-2007. He was an intern researcher at ATR spoken language communication Research Laboratories (ATR-SLC) 2003-2006. He was a visiting researcher at the Centre for Speech Technology Research (CSTR), University of Edinburgh, U.K., 2006-2007, where he is currently a senior research fellow, continuing research on speaker adaptation for HMM-based speech synthesis in an EC FP7 collaborative project: EMIME (www.emime.org). His research interests include speech synthesis, speech analysis and speech recognition. He is a member of IEEE, ISCA, IEICE, and ASJ.