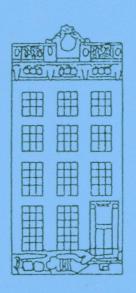
PROCEEDINGS
16



INSTITUTE OF PHONETIC SCIENCES UNIVERSITY OF AMSTERDAM

PROCEEDINGS

OF

THE INSTITUTE OF PHONETIC SCIENCES UNIVERSITY OF AMSTERDAM

16

ISSN: 0167-5613

© Copyright reserved 1992 Published by the Institute of Phonetic Sciences University of Amsterdam Herengracht 338 1016 CG Amsterdam The Netherlands

INTRODUCTION

With respect to this Proceedings 16 of the Institute of Phonetic Sciences of the University of Amsterdam we considered it desirable and informative to incorporate upto-date information about our institute and our research activities. This information contains the (research) part of a recently revised version of our Institute's "Profile".

Apart from this information from our Institute's "Profile", Proceedings 16 contains a number of contributions concerning current research projects, summaries of recently finished Ph.D. theses and Master's theses, and abstracts of contributions submitted for publication in international journals.

The contributions on current research projects in this Proceedings represent our two main research fields:

- PERCEPTUAL AND PHYSICAL DESCRIPTION OF VARIATION AND INVARIANCE IN SPEECH
- SPEECH COMMUNICATION: DEVELOPMENT AND PATHOLOGY

For your information a list of personnel of our Institute is included, as well as a list of our publications in 1991 and 1992.

All correspondence, including requests to be put on our mailing list, may be sent to:

Institute of Phonetic Sciences University of Amsterdam Herengracht 338 1016 CG Amsterdam The Netherlands

tel.: + 31 20 5252183 fax: + 31 20 5252197 telex: 16526 NL UNASD

e-mail: IFA@FON.LET.UVA.NL

December, 1992.

Editors: F.J. Koopmans-van Beinum

A. van Wieringen

Technical realization: J. Bossema

F.W. Eelzak D.T. Jaasma

LIST OF PERSONNEL

Scientific Staff

Prof. dr. ir. L.C.W. Pols

Drs. D.R. van Bergem Drs. P.P.G. Boersma

Dr. L.F.M. ten Bosch

Drs. C.J. Clement

Drs. L.W.M. Damen

Drs. J.S.C. van Dijk

Drs. L.W.A. van Herpt Drs. A.F. Kloosterman

Dr. F.J. Koopmans-van Beinum

Drs. C.T.L. Kuijpers

Drs. G.P.M. Laan Drs. I.M. de Leeuw

Drs. G.L.Meinsma

Dr. E.A. den Os

Drs. R.J.J.H. van Son

Drs. J.M. van der Stelt Dr. M.T.J. Tielen

Ing. J. Verhave

Ir. X.Wang

Drs. D.J.M. Weenink

Drs. A. van Wieringen

director of the Institute

on AIO1 contract until 1-11-'92

on AIO1 contract

postdoc

on AIO1 contract, financed by IFOTT2 and IvD3

guest researcher

on various small contracts (NWO⁴ and Faculty)

on AIO1 contract until 1-6-'92

on AIO¹ contract on AIO¹ contract

guest researcher

postdoc on IFOTT² and IvD³ contract

guest researcher (ESPRIT⁵)

guest researcher

on ESPRIT⁵ contract until 1-4-'92

on AIO1 contract

on AIO1 contract

Technical and Administrative Staff

J. Bossema

F.W. Eelzak

D.T. Jaasma

A.W. van Maanen

A.G. Wempe

Facultary position as post-graduate student

Institute for Functional Research of Language and Language Use

Institute for the Deaf, St. Michielsgestel

4 Netherlands organization for scientific research

5 European Strategic Program for Research and Development of Information Technology

CONTENTS

	page
General information and survey of research projects from "Profile of the Institute of Phonetic Sciences University of Amsterdam 93"	i-xxx
Dimensionality and correlation of observation vectors in HMM-based speech recognition Xue Wang, Louis F.M. ten Bosch & Louis C.W. Pols	1
On the relation between vowel duration in HMM-models and the transition probabilities in phoneme-like units Louis F.M. ten Bosch	27
Spectral decomposition in models of hearing Jan S.C. van Dijk	35
What's in a schwa? Florien J. Koopmans-van Beinum	53
Perceptual differences between spontaneous and read aloud speech Gitta P.M. Laan	65
Summaries of Ph.D. theses	
Steeneken, H.J.M., On measuring and predicting speech intelligibility	81
Alphen, P. van, HMM-based continuous-speech recognition. Systematic evaluation of various system components	83
Tielen, M.T.J., Male and female speech. An experimental study of sex-related voice and pronunciation characteristics	85
Gelderen, A. van, The evaluation of speaking ability in communicative situations. Global rating and detailed analysis of oral performance of students of 11 to 12 years of age (in Dutch)	89
Summaries of Master's theses	
Kloosterman, S., Recognition of vowel segments by using neural networks (in Dutch)	94
Kortekaas, R., Cellular automata and speech recognition	95
Abstract	
D.R. van Bergem, Acoustic vowel reduction as a function of sentence accent word stress, and word class	97
List of publications in 1991 and 1992	99