

PROCEEDINGS OF THE

20<sup>TH</sup> SYMPOSIUM

ON

INFORMATION THEORY

IN THE

BENELUX

## TABLE OF CONTENTS

	Page
• Guest lecture : Automatic sequences Fritz von Haeseler	1
Session 1 : Data compression, video coding	
• Nonasymptotic lower bound on the maximal cumulative redundancy of universal coding Vladimir B. Balakirsky, Frans M.J. Willems	17
• Complexity reducing techniques for the CTW algorithm Paul A.J. Wolf, Frans M.J. Willems, Tjalling J. Tjalkens	25
• Stochastic language modelling using context tree weighting Peter Vanroose	33
• A fast full search equivalent for mean-shape-gain vector quantizers Jean Cardinal	39
• Efficient coding of non-static texture in 3D scenes Stef Desmet, Bert DeKnuydt, Luc Van Gool, Luc Van Eycken	47
• High-quality embedded compression for digital TV Mihaela v.d. Schaer-Mitrea, Peter H.N. de With	55
Session 2 : Cryptography 1	
• Timing attack: what can be achieved by a powerful adversary ? Gaël Hachez, François Koeune, Jean-Jacques Quisquater	63
• The digital timestamping problem Bart Van Rompay, Bart Preneel, Joos Vandewalle	71
• Design of a secure timestamping service with minimal trust requirement H. Massias, X. Serret Avila, J.-J. Quisquater	79

## **Session 3 : Cryptography 2**

- Characterization of the secrecy of a common key  
constructed via data transmission over the two-way  
« AND » channel 87  
Vladimir B. Balakirsky
- An attack against the Alabbadi-Wicker scheme 95  
Sheng-bo Xu, Jeroen Doumen
- Diffusion analysis of Feistel networks 101  
Jorge Nakahara Jr, Joos Vandewalle, Bart Preneel
- Anonymity controlled electronic payment systems 109  
Joris Claessens, Bart Preneel, Joos Vandewalle

## **Session 4 : Speech processing, communication networks**

- Improved noise robustness for speech recognition by  
adaptive SVD-based filtering 117  
Kris Hermus, Patrick Wambacq and Dirk Van Compernolle
- On the objective speech quality of the TETRA system 125  
C.H.Slump, T. de Bont, A.M. Mertens, K. Verwey
- Proposal for an adaptive multi-rate coder for GSM 133  
A. Gerrits, A. Koppelaar, R. Taori, R. Sluijter, C. Baggen,  
E. Hekstra-Nowacka

## **Session 5 : Classification, pattern recognition, neural networks**

- Linear feature transformations based on MCE and MMI 141  
Kris Demuynck, Patrick Wambacq
- Generalization capacity of neural networks for the classification  
of ovary tumours 149  
Ellen Lerouge, Sabine Van Huffel
- Generalized moment invariants for viewpoint and illumination  
independent color pattern recognition 157  
Florica Mindru, Theo Moons, Luc Van Gool

## **Session 6 : Shannon theory, detection, signal processing**

- On certain channels with a random parameter 165  
Mark S.Pinsker, Vyacheslav V.Prelov, Edward C. van der Meulen
- On error correction in information feedback schemes 173  
M.S. Bargh, J.P.M. Schalkwijk
- More on the duality between source and channel coding 181  
V.N. Koshelev, E.C. van der Meulen
- An efficient algorithm for selecting optimal configurations 189  
of AR-coefficients  
Rudy Moddemeijer
- Optimal resource management algorithm for adaptive modelling 197  
J. Levendovszky, L. Kovács, I. Koller, E.C. van der Meulen

## **Session 7 : Channel coding, zero-error information theory**

- Multirate block codes 205  
J.B.H. Peek
- The binary multiplying channel without feedback : New rate 215  
pairs in the zero-error capacity region  
Ludo Tolhuizen
- Error correction capabilities of concatenated coding schemes 219  
with single-trial bounded distance decoding and optimized erasing  
Jos H. Weber, Khaled A.S. Abdel-Ghaffar
- Coding for random access communications 227  
A.J. Han Vinck