



Automatic Speaker Recognition System

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Automatic Speaker Recognition System:

Automatic Speaker Recognition System for Telephone Speech Chiwei Che,1998 **Automatic Speech & Speaker Recognition** N. Rex Dixon,Thomas B. Martin,1979 **Development of a Text-independent Automatic Speaker Recognition System** Tumisho Billson Mokgonyakne,2021 *Automatic Speaker Recognition System* Alan Higgins,Joe Naylor,ITT DEFENSE COMMUNICATIONS DIV SAN DIEGO CA.,1984 The Defense Communications Division of ITT ITTDCD has developed an automatic speaker recognition ASR system that meets the functional requirements defined in NRL s Statement of Work This report is organized as follows Chapter 2 is a short history of the development of the ASR system both the algorithm and the implementation Chapter 3 describes the methodology of the system testing while Chapter 4 summarizes the test results In Chapter 5 we discuss some further testing that was performed using the GFM test material Conclusions derived from the contract work are given Chapter 6 Speech recognition JES *Automatic Speech and Speaker Recognition* Chin-Hui Lee, Frank K. Soong, Kuldip Paliwal,1996-03-31 Research in the field of automatic speech and speaker recognition has made a number of significant advances in the last two decades influenced by advances in signal processing algorithms architectures and hardware These advances include the adoption of a statistical pattern recognition paradigm the use of the hidden Markov modeling framework to characterize both the spectral and the temporal variations in the speech signal the use of a large set of speech utterance examples from a large population of speakers to train the hidden Markov models of some fundamental speech units the organization of speech and language knowledge sources into a structural finite state network and the use of dynamic programming based heuristic search methods to find the best word sequence in the lexical network corresponding to the spoken utterance Automatic Speech and Speaker Recognition Advanced Topics groups together in a single volume a number of important topics on speech and speaker recognition topics which are of fundamental importance but not yet covered in detail in existing textbooks Although no explicit partition is given the book is divided into five parts Chapters 1 2 are devoted to technology overviews Chapters 3 12 discuss acoustic modeling of fundamental speech units and lexical modeling of words and pronunciations Chapters 13 15 address the issues related to flexibility and robustness Chapter 16 18 concern the theoretical and practical issues of search Chapters 19 20 give two examples of algorithm and implementational aspects for recognition system realization Audience A reference book for speech researchers and graduate students interested in pursuing potential research on the topic May also be used as a text for advanced courses on the subject **Hardware Implementation of an Automatic Speaker Recognition System Using Artificial Neural Networks** Viresh Moonasar,2002 **Text-independent, Automatic Speaker Recognition System Evaluation with Males Speaking Both Arabic and English** Safi S. Alamri,2015 *Automatic Speaker Recognition Using Statistical Models* William J. J. Roberts,Defence science and technology organisation canberra (Australia),Electronics and Surveillance Research Laboratory (Australia),1998 This report describes the automatic identification of speakers from their voices This

process has application in forensics and in voice actuated security systems The implementation and theoretic underpinnings of a statistical based speaker recognition system are presented in addition to the performance of the system on standard speech corpora In a speaker verification experiment the system yielded an error rate of under 5 per cent when identical microphones are used for testing and training

Automatic Speaker and Speech Recognition Joke Badejo, Tunji Ibiyemi, 2013 Automatic speech recognition and speaker recognition have a lot of applications in personal identification access control and in the new man machine interface paradigm The existing applications in voice activated embedded systems solve the problem of recognition of the spoken words only or the problem of recognition of a speaker through the words uttered only The goal of this project therefore is the development of a robust algorithm for both speech recognition and speaker verification An example of a target application of this work is speech dialing of mobile phones with a speaker verification front end in order to effect access control In view of the memory and computational constraints of embedded systems the dynamic time warping algorithm is used This project only considers isolated spoken digits The developed algorithm is coded in C language and can be ported to firmware for Arabic numeral digit recognition with a speaker verification front end for an embedded system like mobile phones The system produced a FAR of 13.33% and a FRR of 24.3% for a total of 70 true claims and 30 false claims It also had a word accuracy of 96.7%

Finding Difficult Speakers in Automatic Speaker Recognition Lara Lynn Stoll, 2011 The task of automatic speaker recognition wherein a system verifies or determines a speaker's identity using a sample of speech has been studied for a few decades In that time a great deal of progress has been made in improving the accuracy of the system's decisions through the use of more successful machine learning algorithms and the application of channel compensation techniques and other methodologies aimed at addressing sources of errors such as noise or data mismatch In general errors can be expected to have one or more causes involving both intrinsic and extrinsic factors Extrinsic factors correspond to external influences including reverberation noise and channel or microphone effects Intrinsic factors relate inherently to the speaker himself and include sex age dialect accent emotion speaking style and other voice characteristics This dissertation focuses on the relatively unexplored issue of dependence of system errors on intrinsic speaker characteristics In particular I investigate the phenomenon that some speakers within a given population have a tendency to cause a large proportion of errors and explore ways of finding such speakers There are two main components to this thesis In the first I establish the dependence of system performance on speakers building upon and expanding previous work demonstrating the existence of speakers with tendencies to cause false alarm or false rejection errors To this end I explore two different data sets one that is an older collection of telephone channel conversational speech and one that is a more recent collection of conversational speech recorded on a variety of channels including the telephone as well as various types of microphones Furthermore in addition to considering a traditional speaker recognition system approach for the second data set I utilize the outputs of a more contemporary approach that is

better able to handle variations in channel The results of such analysis repeatedly show variations in behavior across speakers both for true speaker and impostor speaker cases Variation occurs both at the level of speech utterances wherein a given speaker's performance can depend on which of his speech utterances is used as well as on the speaker level wherein some speakers have overall tendencies to cause false rejection or false alarm errors Additionally lamb ish speaker behavior where the speaker tends to produce false alarms as the target is correlated with wolf ish behavior where the speaker tends to produce false alarms as the impostor On the more recent data set 50% of the false rejection and false alarm errors are caused by only 15 25% of the speakers The second component of this thesis investigates a straightforward approach to predict speakers that will be difficult for a system to correctly recognize I use a variety of features to calculate feature statistics that are then used to compute a measure of similarity between speaker pairs By ranking these similarity measures for a set of impostor speaker pairs I determine those speaker pairs that are easy for a system to distinguish and those that are difficult to distinguish A variety of these simple distance measures could successfully select both easy and difficult to distinguish speaker pairs as evaluated by differences in detection cost and false alarm probability across a large number of systems Of those tested the best feature measure at finding the most and least difficult to distinguish speaker pairs was the Euclidean distance between vectors of the mean first second and third formant frequencies Even greater success was attained by the Kullback Liebler KL divergence between pairs of speaker specific GMMs Furthermore an examination of the smallest and biggest distances as computed by the KL divergence revealed individual speaker tendencies to consistently fall among the most or least difficult to distinguish speaker pairs I then develop an approach for finding those individual speakers who will be difficult for the system using a set of feature statistics calculated over regions of speech In particular a support vector machine SVM classifier is trained to distinguish between difficult and easy speaker examples in order to produce an overall measure of speaker difficulty as a target or impostor The resulting precision and recall measures were over 0 8 for difficult impostor speaker detection and over 0 7 for difficult target speaker detection Depending on the application the detection threshold can be tuned to improve precision recall or specificity in order to best suit the needs of a particular task The same approach can be taken with single conversation sides as with a set of conversation sides corresponding to the same speaker since the input feature statistics can be calculated over any number of speech samples

Forensic Speaker Recognition Amy Neustein, Hemant A. Patil, 2011-10-05 Forensic Speaker Recognition Law Enforcement and Counter Terrorism is an anthology of the research findings of 35 speaker recognition experts from around the world The volume provides a multidimensional view of the complex science involved in determining whether a suspect's voice truly matches forensic speech samples collected by law enforcement and counter terrorism agencies that are associated with the commission of a terrorist act or other crimes While addressing such topics as the challenges of forensic case work handling speech signal degradation analyzing features of speaker recognition to optimize voice verification system performance and

designing voice applications that meet the practical needs of law enforcement and counter terrorism agencies this material all sounds a common theme how the rigors of forensic utility are demanding new levels of excellence in all aspects of speaker recognition The contributors are among the most eminent scientists in speech engineering and signal processing and their work represents such diverse countries as Switzerland Sweden Italy France Japan India and the United States Forensic Speaker Recognition is a useful book for forensic speech scientists speech signal processing experts speech system developers criminal prosecutors and counter terrorism intelligence officers and agents *Speaker Recognition* Bandar Hezam,2023-12-06 Bachelor Thesis from the year 2019 in the subject Engineering Computer Engineering grade A National University of Malaysia Apu course Mechatronics language English abstract Voice recognition is a computer software program or hardware device with the ability to decode the human voice Voice recognition is a system that allows for a secure method of authenticating speakers the system work in such a way that it general speaker model during the enrollment phase which based on the speaker characteristics The system testing phase typically involves making a claim on the identity of an unknown speaker using the given speech characteristics and the trained models However speaker identification is known to be one among the two categories of speaker recognition system because speaker recognition can be categorized also as speaker verification whereas the main difference between both speaker identification and speaker verification ensure to known if the person speaking and claim to be is fully verified while speaker identification make multiple decision by comparing of the person speaking with the one trained or store in database as an attempt to identify the speaker The interest of the assignment is speaker identification therefore speaker identification is the main focus for this study **Behavioral Biometrics for Human Identification: Intelligent Applications** Wang, Liang,Geng, Xin,2009-08-31 This edited book provides researchers and practitioners a comprehensive understanding of the start of the art of behavioral biometrics techniques potential applications successful practice and available resources Provided by publisher *Automatic Speech Recognition* Kai-Fu Lee,1988-10-31 Speech Recognition has a long history of being one of the difficult problems in Artificial Intelligence and Computer Science As one goes from problem solving tasks such as puzzles and chess to perceptual tasks such as speech and vision the problem characteristics change dramatically knowledge poor to knowledge rich low data rates to high data rates slow response time minutes to hours to instantaneous response time These characteristics taken together increase the computational complexity of the problem by several orders of magnitude Further speech provides a challenging task domain which embodies many of the requirements of intelligent behavior operate in real time exploit vast amounts of knowledge tolerate errorfull unexpected unknown input use symbols and abstractions communicate in natural language and learn from the environment Voice input to computers offers a number of advantages It provides a natural fast hands free eyes free location free input medium However there are many as yet unsolved problems that prevent routine use of speech as an input device by non experts These include cost real time response speaker independence robustness to variations such as

noise microphone speech rate and loudness and the ability to handle non grammatical speech Satisfactory solutions to each of these problems can be expected within the next decade Recognition of unrestricted spontaneous continuous speech appears unsolvable at present However by the addition of simple constraints such as clarification dialog to resolve ambiguity we believe it will be possible to develop systems capable of accepting very large vocabulary continuous speechdictation

Computer Networks Andrzej Kwiecien,Piotr Gaj,Piotr Stera,2013-05-27 This book constitutes the refereed proceedings of the 20th International Conference on Computer Networks CN 2013 held in Lwowek Slaski Poland in June 2013 The 58 revised full papers presented were carefully reviewed and selected for inclusion in the book The papers in these proceedings cover the following topics computer networks network architectural issues Internet and wireless solutions teleinformatics and communications new technologies queueing theory and queueing networks innovative applications networking in e business security aspects of hardware and software industrial systems quantum and bio informatics cloud networking and services

ThinkQuest 2010 S J Pise,2011-08-31 This proceedings is a representation of decades of reasearch teaching and application in the field Image Processing Fusion and Information Technology areas Digital radio Communication Wimax Electrical engg VLSI approach to processor design embedded systems design are dealt in detail through models and illustrative techniques *Human and Automatic Speaker Recognition over Telecommunication Channels* Laura Fernández Gallardo,2015-08-17 This work addresses the evaluation of the human and the automatic speaker recognition performances under different channel distortions caused by bandwidth limitation codecs and electro acoustic user interfaces among other impairments Its main contribution is the demonstration of the benefits of communication channels of extended bandwidth together with an insight into how speaker specific characteristics of speech are preserved through different transmissions It provides sufficient motivation for considering speaker recognition as a criterion for the migration from narrowband to enhanced bandwidths such as wideband and super wideband

Two Day International Conference on Data Science and Information Ecosystem'21 Dr.M.Thangaraj,Dr.K.S.Gomathi , **Artificial Intelligence and Speech Technology** Amita Dev,Arun Sharma,S. S. Agrawal,Ritu Rani,2024-11-23 This two volume set CCIS 2267 and 2268 constitutes the refereed proceedings of 5th International Conference on Artificial Intelligence and Speech Technology AIST 2023 held in Delhi India during December 26 27 2023 The 71 papers presented in two volumes were carefully reviewed and selected from 235 submissions Part I focuses on Speech Technology using AI and Part II focuses on AI innovations for CV and NLP These volumes are organized in the following topical sections Part I Trends and Applications in Speech Processing Recent Trends in Speech and NLP Emerging trends in Speech Processing Advances in Computational Linguistics and NLP Part II Recent Trends in Machine Learning and Deep Learning Analysis using Hybrid technologies with Artificial Intelligence Exploring New Horizons in Computer Vision Research Applications of Machine Learning and Deep Learning **Intelligent System Design** Suresh Chandra Satapathy,Vikrant Bhateja,B. Janakiramaiah,Yen-Wei Chen,2020-08-10 This book presents a collection of

high quality peer reviewed research papers from the 6th International Conference on Information System Design and Intelligent Applications INDIA 2019 held at Lendi Institute of Engineering Technology India from 1 to 2 November 2019 It covers a wide range of topics in computer science and information technology including data mining and data warehousing high performance computing parallel and distributed computing computational intelligence soft computing big data cloud computing grid computing and cognitive computing

Unveiling the Energy of Verbal Art: An Psychological Sojourn through **Automatic Speaker Recognition System**

In a world inundated with screens and the cacophony of instant interaction, the profound power and mental resonance of verbal artistry often diminish in to obscurity, eclipsed by the constant barrage of noise and distractions. However, situated within the musical pages of **Automatic Speaker Recognition System**, a interesting work of literary brilliance that pulses with fresh feelings, lies an remarkable journey waiting to be embarked upon. Penned by way of a virtuoso wordsmith, that interesting opus books visitors on a psychological odyssey, delicately exposing the latent potential and profound impact embedded within the intricate web of language. Within the heart-wrenching expanse of the evocative evaluation, we shall embark upon an introspective exploration of the book is main subjects, dissect its interesting writing design, and immerse ourselves in the indelible effect it leaves upon the depths of readers souls.

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