

Fathi E. Abd El-Samie

# Information Security for Automatic Speaker Identification

# Information Security For Automatic Speaker Identification Springerbriefs In Electrical And Computer Engineering

**J Elliott**



## **Information Security For Automatic Speaker Identification Springerbriefs In Electrical And Computer Engineering:**

**Information Security for Automatic Speaker Identification** Fathi E. Abd El-Samie, 2011-09-14 The author covers the fundamentals of both information and communication security including current developments in some of the most critical areas of automatic speech recognition Included are topics on speech watermarking speech encryption steganography multilevel security systems comprising speaker identification real transmission of watermarked or encrypted speech signals and more The book is especially useful for information security specialist government security analysts speech development professionals and for individuals involved in the study and research of speech recognition at advanced levels

**Robustness-Related Issues in Speaker Recognition** Thomas Fang Zheng, Lantian Li, 2017-04-06 This book presents an overview of speaker recognition technologies with an emphasis on dealing with robustness issues Firstly the book gives an overview of speaker recognition such as the basic system framework categories under different criteria performance evaluation and its development history Secondly with regard to robustness issues the book presents three categories including environment related issues speaker related issues and application oriented issues For each category the book describes the current hot topics existing technologies and potential research focuses in the future The book is a useful reference book and self learning guide for early researchers working in the field of robust speech recognition **Robust**

**Speaker Recognition in Noisy Environments** K. Sreenivasa Rao, Sourjya Sarkar, 2014-06-21 This book discusses speaker recognition methods to deal with realistic variable noisy environments The text covers authentication systems for robust noisy background environments functions in real time and incorporated in mobile devices The book focuses on different approaches to enhance the accuracy of speaker recognition in presence of varying background environments The authors examine a Feature compensation using multiple background models b Feature mapping using data driven stochastic models c Design of super vector based GMM SVM framework for robust speaker recognition d Total variability modeling i vectors in a discriminative framework and e Boosting method to fuse evidences from multiple SVM models *Automatic Speech and Speaker Recognition* Chin-Hui Lee, Frank K. Soong, Kuldeep K. Paliwal, 2012-12-06 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

[Fundamentals of Speaker Recognition](#) Homayoon Beigi, 2011-12-09 An emerging technology Speaker Recognition is becoming well known for providing voice authentication over the telephone for helpdesks call centres and other enterprise businesses for business process automation Fundamentals of Speaker Recognition introduces Speaker Identification Speaker Verification Speaker Audio Event Classification Speaker Detection Speaker Tracking and more The technical problems are rigorously defined and a complete picture is made of the relevance of the discussed algorithms and their usage in building a comprehensive Speaker Recognition System Designed as a textbook with examples and exercises at the end of each chapter Fundamentals of Speaker Recognition is suitable for advanced level students in computer science and engineering concentrating on biometrics speech recognition pattern recognition signal processing and specifically speaker recognition It is also a valuable reference for developers of commercial technology and for speech scientists Please click on the link under Additional Information to view supplemental information including the Table of Contents and Index

[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

[Speaker Authentication](#) Qi (Peter) Li, 2011-10-01 This book focuses on use of voice as a biometric measure for personal authentication In particular Speaker Recognition covers two approaches in speaker authentication speaker verification SV and verbal information verification VIV The SV approach attempts to verify a speaker's identity based on his/her voice characteristics while the VIV approach validates a speaker's identity through verification of the content of his/her utterance's SV and VIV can be combined for new applications This is still a new research topic with significant potential applications The book provides with a broad overview of the recent advances in speaker authentication while giving enough attention to advanced and useful algorithms and

techniques It also provides a step by step introduction to the current state of the speaker authentication technology from the fundamental concepts to advanced algorithms We will also present major design methodologies and share our experience in developing real and successful speaker authentication systems Advanced and useful topics and algorithms are selected with real design examples and evaluation results Special attention is given to the topics related to improving overall system robustness and performances such as robust endpoint detection fast discriminative training theory and algorithms detection based decoding sequential authentication etc For example the sequential authentication was developed based on statistical sequential testing theory By adding enough subtests a speaker authentication system can achieve any accuracy requirement The procedure of designing the sequential authentication will be presented For any presented technique we will provide experimental results to validate the usefulness We will also highlight the important developments in academia government and industry and outline a few open issues As the methodologies developed in speaker authentication span several diverse fields the tutorial book provides an introductory forum for a broad spectrum of researchers and developers from different areas to acquire the knowledge and skills to engage in the interdisciplinary fields of user authentication biometrics speech and speaker recognition multimedia and dynamic pattern recognition

Self-Learning Speaker Identification Tobias Herbig, Franz Gerl, Wolfgang Minker, 2011-06-18 Current speech recognition systems are based on speaker independent speech models and suffer from inter speaker variations in speech signal characteristics This work develops an integrated approach for speech and speaker recognition in order to gain space for self learning opportunities of the system This work introduces a reliable speaker identification which enables the speech recognizer to create robust speaker dependent models In addition this book gives a new approach to solve the reverse problem how to improve speech recognition if speakers can be recognized The speaker identification enables the speaker adaptation to adapt to different speakers which results in an optimal long term adaptation

**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 know 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      Algorithms for Automatic Speaker Identification Matthew B. Kennedy, University of Southern Queensland. Faculty of Engineering and Surveying, 1998      **Secure Voice Processing Systems against Malicious Voice Attacks** Kun Sun, Shu Wang, 2023-10-30 This book provides readers with the basic understanding regarding the threats to the voice processing systems the state of the art defense methods as well as the current research results on securing voice processing systems It also introduces three mechanisms to secure the voice processing systems against malicious voice attacks under different scenarios by utilizing time domain signal waves frequency domain spectrum features and acoustic physical attributes First the authors uncover the modulated replay attack which uses an inverse filter to compensate for the spectrum distortion caused by the replay attacks to bypass the existing spectrum based defenses The authors also provide an effective defense method that utilizes both the time domain artifacts and frequency domain distortion to detect the modulated replay attacks Second the book introduces a secure automatic speech recognition system for driverless car to defeat adversarial voice command attacks launched from car loudspeakers smartphones and passengers Third it provides an acoustic compensation system design to reduce the effects from the spectrum reduction attacks by the audio spectrum compensation and acoustic propagation principle Finally the authors conclude with their research effort on defeating the malicious voice attacks and provide insights into more secure voice processing systems This book is intended for security researchers computer scientists and electrical engineers who are interested in the research areas of biometrics speech signal processing IoT security and audio security Advanced level students who are studying these topics will benefit from this book as well      **Speaker Spotting** Patrick Ryan Kwon, 1998      *Speaker Recognition Using Neural Networks* Rita Hanna Wouhaybi, 1996 With the emergence of more digital security systems and the use of more passwords on automated machines the idea of speaker recognition seems to be a more difficult password to be imitated In addition the speaker recognition may have several applications other than using it as a password In fact it can be used anywhere where it is necessary or beneficial to know the speaker Every signal can be represented by its Fourier transform which is a form of representing the signal in frequency domain Since the voice signal can be represented as an electrical signal then definitely it is easy to get its Fourier transform or what we may often refer to as the spectrum The spectrum is quite useful in identifying people since every person has several frequencies which he/she uses more frequently than other frequencies which make his/her voice unique However using all the details of the frequency representation is not practical since this may result in too much calculation thus another interpretation is used in this research In this step the idea of using the histogram as applied in a similar way to applying it in the field of digital image processing Hence a simpler picture of the sound signal is given to us on which the identification process must be based Previous research has shown that dividing speakers into males and females may improve the performance of identification Thus one might predict that dividing the males into their groups as Bass and Tenor and similarly for the females as Soprano and Alto may also help in improving the performance Thus a neural

network is used to detect the group of the speaker The second step in recognizing is to build another neural network to identify the speaker given the group he belongs to In both parts of the neural network Al Alaoui algorithm is used which proved to give efficient results when used in other systems The whole system gave good results and kept almost the same performance when used with text dependent or text independent voices *Automatic Speech & Speaker Recognition* N. Rex Dixon, Thomas B. Martin, 1979

**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 Automatic speaker recognition, identification and verification F. Bimbot, 1995

**Automatic Speaker Identification in Novels** Hua He, 2011

**Automatic Speech and Speaker Recognition** N. Rex Dixon, Thomas B. Martin, 1979

**On Speaker Identification** Lo-Soun Su, PURDUE UNIV LAFAYETTE IND SCHOOL OF ELECTRICAL ENGINEERING., 1972 Automatic speaker identification was performed based on the statistical information extracted from power spectra of continuous speech Nasal consonants extracted from the continuous speech have been proved to be the best features for speaker identification Words without nasal consonants embedded are the least favorable Both maximum correlation and minimum distance criteria are better than the minimum absolute difference criterion for speaker identification Author

**The Use of Speaker Correlation Information for Automatic Speech Recognition** Timothy James Hazen, 1998

The Top Books of the Year Information Security For Automatic Speaker Identification Springerbriefs In Electrical And Computer Engineering The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous engrossing novels enthralling the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the engaging narratives that have enthralled audiences this year. Information Security For Automatic Speaker Identification Springerbriefs In Electrical And Computer Engineering : Colleen Hoovers "It Ends with Us" This heartfelt tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can triumph. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids compelling storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Discover the Magic : Delia Owens "Where the Crawdads Sing" This mesmerizing coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These bestselling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a exceptional and suspenseful novel that will keep you guessing until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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