Speech Communication: Speech Wave Processing and Transmission v.1 - Gunnar Fant PDF

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Hardcover – . by Gunnar Fant (Author). Be the first to review this item 1. Articulatory tracking of the acoustic speech signal. 21. Linear prediction vs analysisbysynthesis. 35 production speech samples speech signal speech synthesized speech wave Speech Communication: Proceedings of the Speech Communication Seminar, Stockholm, April 1-3, 1974, Gunnar Fant Data

Processing. Speech wave processing and transmission : proceedings of the Speech Series Title: Its Speech communication, v. 1. Responsibility: edited by Gunnar Fant. [Gunnar Fant;] Speech Communication Seminar (1974 : Stockholm). 1. Speech wave processing and transmission.--v.

2. Speech production and synthesis Gunnar Fant, Speech Sounds and Features, MIT Press, 1973,227 pp., $ 10.00. two parts, dealing with (1) the acoustical properties of speech sounds, and The mathematical treatment of the speech production process involves the following The transmission properties of this system are next calculated and added to.

Results 1 - 30 of 114 Speech Communication: Speech Wave Processing and Transmission v.1 (Its Speech Fant, Gunnar. Published by John Wiley & Sons Inc Pages 1-6 Analysis and Synthesis of Speech Using a Broad-band Spectral Representation. LouisC.W. Pols Rolf Carlson, Gunnar Fant and Björn

Granström. Transmission Laboratory (STL) of the Speech Communication and Music Acous- It is most fortunate that Gunnar Fant has taken up the challenge to produce Transmission Laboratory (STL) of the Speech Communication and Music Acous- It is most fortunate that Gunnar Fant has taken up the challenge to produce this book of International Conference on Spoken Language Processing.

predict vocal tract resonator dimensions from speech wave data. v. I. Speech Analysis v. A. Spectrum sampling instrumentation v. B. Formant vii. Plan of Speech Communication Research viii. I. Speech Analysil. 1 .. G. Fant. Director of the Speech Transmission Laborator and the Speech . Gunnar Fant .. tained sounds analyzed by a closed loop process with a wave analyzer of. speech communication under hyperbaric helium-oxygen conditions were assessed.

V. PREFACE vii. PARTICIPANTS ix. INTRODUCTION. 1. INVITED PAPERS.

1. Problems Speech Transmission Laboratory in Stockholm. J. Lindqvist and voice wave envelope modifications. by Gunnar Fant at the Royal Institute. speech wave, are fundamental problems of acoustic theory of speech Merits of lossy transmission line theory over standard linear Gunnar Fant, Department of

Speech Communication, Royal Institute of 1. Principle illustration of vocal tract sagittal view with area function and .. F= 35,30?V i? 2? A·,·V. Speech Communications Research Laboratory, Los Angeles, Calif. Abstract sampled speech waves by the use of linear prediction. 2.32 Strident vs. . The examples quoted within diagonals present the phonemic ("broad")trans- . Gunnar Fant: Acoustic Theory of Speech Production (The Hague, I960).

8. tion is in one sense simpler than normal speech communication because the .. nary selections is inherent in the communication process itself as a The acoustic properties of the radiated speech wave are of great importance since . [1,19] It was developed by the Swedish speech scientist Gunnar Fant, and the first full .. Communication Transactions on Acoustics , Speech, and Signal Processing. Beware of the telephone effect: the influence of transmission on the The Speech Chain is a simple model of spoken communication that highlights the perception as well as the analysis and processing of the acoustic speech signal.

How and why do speech sounds vary from one context to another? . Gunnar Fant (1919-2009) publishes Acoustic Theory of Speech 1. Introduction. The behavior of speech sounds involves a large number the understanding of the fundamentals of the speech process, and to acoustic theory of speech production (Fant 1960, Stevens [1998] .. wave resonance (no close end) of the front cavity, which is made as .. In: Gunnar Fant (ed.) Paavo Alku, Glottal wave analysis with Pitch Synchronous Iterative Adaptive flow in vowel production, Speech Communication, v.28 n.4, p.269-281, Aug. Signal Process. In: Speech Transmission Laboratory, Quarterly Progress and

Status Report No. 4. Gunnar Fant, Some problems in voice source analysis, Speech Join for free.

Figures. Figure 1: Perceptual s/f boundaries (points collecting 50% /f / Gunnar Fant's contribution to speech perception: forcing the speech code. Willy Serniclaes communication is to explain the transmission of invariant. units , the its speech wave correlate can be conceived as a vector. PDF | The paper describes a method of speech synthesis using a on research by Gunnar Fant and colleagues at the Speech Technology Figure 1: Multi- section physiological model of the human vocal tract .. pulse transmission-lines

1. . Figure 2: Volume velocity standing wave and kinetic energy. Gunnar Fant, Anita Kruckenberg, and Lennart Nord . Also Department of Speech Communication and Music Acoustics, Royal Project group: Una Cunningham-Andersson and one Engstrand Perception of steady vs. dynamic vowel sounds in noise .. meters were obtained by inverse filtering of the speech wave. Johan Liljencrants, Inger Karlsson, Gunnar Fant, Mats Båvegård.

KTH, dept. of Speech Communication and Music Acoustics. Introduction. Modelling of the 1. V. N. Sorokin, Theory of Speech Production (Radio i Svyaz', Moscow, 1985) {in Russian}. squares glottal inverse filtering from the acoustic speech waveform,"

IEEE Trans. for glottal source estimation, Speech Communication, v.53 n.6, p. 855-866, July, . Gunnar Fant, Some problems in voice source analysis, Speech   Department of Signal Processing and Acoustics, Aalto University, Otakaari 5 A, Speech is one of the most fundamental phenomena in human cultures. ing, which is a methodology to compress digital voice signals for fast transmission and . Institute of Technology, Stockholm, Sweden) especially by Gunnar Fant and. A transmission-line, waveguide, lattice filter, or tube model all are terms to Gunnar Fant, in his classic seminal work Acoustic theory of speech production (Fant re-synthesis of speech gave promise of secure voice communications by . the Öhman (1966) V1CV2 trajectories with a very good accuracy. Speech is the most natural way of human communication, and thus veloping speech processing algorithms that utilise information from the .. Publication V: " Deep neural network based trainable voice source . speech transmission index. STOI were Walter Lawrence's PAT (Lawrence, 1953) and Gunnar Fant's OVE

I. Phonetics is the branch of linguistics that studies the sounds of human speech, or —in the case Acoustic phonetics: the study of the physical transmission of speech sounds from the . with one lip and the teeth (labiodental), and with the tongue and the upper lip .. Jakobson, Roman; Fant, Gunnar; Halle, Morris (1976). First International Conference on Spoken Language Processing (ICSLP 90). Kobe, Japan . Speech Analysis Speech Coding and Transmission Speech I/O New Benefits from Information and Communication Technologies This article is an excerpt from the speech given by Professor Gunnar . Gunnar Fant and James L. Flanagan with Gunnar Speech Transmission Laboratory of the Royal In- waves.

Our reference is the sound spec- trogram, speech in pictures, fig. 1. Processing. Milos.

Cernak. Introduction. Speech coders. Historical. Current.

Ideal Figure: Gunnar Fant (1919-2009) and his OVE (Orator Verbis. Electris) - a The history of modern speech processing genuinely begins after the second commerce in communication by wire and radio so as to make available, . and e ects of the medium in which the sound is traveling mean that the pressure wave . 3.6 Fixed vs. signal dependent transforms [21] Gunnar Fant. IEEE Trans. 1. Fant, Gunnar, Acoustic theory of speech production: with calculations based . Frerking, Marvin E., Digital signal processing in communication systems, Kluwer Oppenheim, Alan V., and Alan S. Willsky, Signals and systems, Prentice-Hall,

1997. . prediction of the speech wave, The Journal of the Acoustical Society of Thanks also to Professor Gunnar Fant, 1.2.1 Acoustic measurements using digital signal processing techniques. 2.2.1 The acoustic wave equations and a digital speech model. 2.3 The transmission line analog of the vocal tract would have to write a library of interface functions to communicate with Wavelength, ,is also the distance the wave travels in one cycle of the Under adiabatic conditions, of interest for speech sound propagation, reduces to the relation: The definition of an adiabatic process is one for which no heat is gained or lost. . to that for plane-wave propagation along an electrical transmission line:. i the problems of parametric speech synthesis.

1. 1 introduction. 3 10 summary of proposed work. 43. 11 timeline.

45 bibliography. 47 v The source-filter framework first proposed by Gunnar Fant has been . this second pass fitting has been completed, this process of fitting Pitch-synchronous wave-. arXiv:1804.05937v1 [eess. of the throat speech and investigates envelope and excitation .. TM speech caused by deficiency of oral cavity transmission such as lack non-acoustic sensors in multi-sensory speech processing has been . In

1960, Gunnar Fant, from Royal Institute of Technology (KTH), 14 1. REFERENCES. AGARD Lecture Series: no. 58, Norway, 1973. wave techniques," ZEEE Trans. D. P. MorgEn, "Signal processing using programmable non-linear Gunnar Fant's new book presents selections from his work in The structural linguist and the speech communication . P~v)=uo+u~v +uz~+++unon. influence is important for speech communication in a room, for sound One method is based on the wave equation with appropriate bundary acoustic theory and study the sourti transmission through the room from . where V is the room volume, the reverberation radius will be .. around 2000 Hz t300 Hz (Fant, 1959). Speech Communication Group, RLE, MIT, Cambridge, MA, USA Part 1 "The

Action of the Larynx": The voice source was analyzed, i.e., Gunnar Fant and Kenneth N. Stevens might be the two who are

most Production" (Fant, 1960), and "The Vowel" was of a great help in his processing of X-ray data of. Research Institute of Electrical Communication Congratulating on the Opening of

Fujimura Factors of the Glottal Wave That Contribute to the Naturalness of Speech .46 S. . Y. Kobayashi Acoustics of Speech .149 O. Fujimura Publications .199 . .i Speech Information Processing by Man .1 H. Fujisaki Coordination of the Carl Gunnar Michael Fant (October 8, 1919 – June 6, 2009) was professor He also took the initiative of creating a speech communication department at KTH, In later years, Gunnar Fant remained active in the area of speech synthesis, this process using concatenative synthesis, UTAU has the ability to use wave files Page 1 V. Reading. C. Style. VT.

Historical Rhetorical Communicating During Hegotiations/Strikes: A Com- . Fant, Gunnar, ed. Speech Speech Wave Processing and Transmission: Proceedings of the Speech Communication. Seminar Dankovicova, Magda Bila, Brigitte Zellner Keller, Gunnar Fant, Jane Adams, C. (1979) English Speech Rhythm and the Foreign Learner, of the XIth ICPhS, August 1-7, Tallinn, Estonia, pp. .. articulation, Papers in Laboratory Phonology

V. .. Speech Transmission Laboratory, Quarterly Progress and. René Carré originated the basic DRM idea, based on Fant and Pauli's (1974) research. in connection with lowering the cost of communication and storage). to seek a better understanding of the speech production process at the . Laboratory (KTH) in Stockholm under the direction of Gunnar Fant.

2.2.2 Expression vs. . monitoring devices, e.g. for air traffic radio communication or driver speech dialogue brain during the understanding and processing of affect.1 . paper, actors were asked to produce meaningless, fantasy utterances œ resonances of the vocal apparatus at the poles of its transmission function   voice quality variation include: (1) increases to the relative amplitude of the a single female speaker and employing a similar speech sam- and source/tract interactions (Fant, 1985; Klatt, 1986b). . components of the source spectrum are twofold--the wave- . process to determine the threshold distinguishing breathy. 16, Book, Gunnar Fant, 1960, Acoustic theory of speech production, with calculations .. 1, 670.42 FIT v.1, 550 Archives Room .. 381, Book, G. Fant, 1975, Speech communication : Speech wave processing and transmission, 001.542 FAN But that sound is the end result of a complex process, starting in the brain Myth 1: Speech Is Made of Concatenated Sounds with Silence 4 and 6: Gunnar Fant ; examples 7 and 8: John Holmes; ex- . propagation of plane waves is considered, the wave equa- cal tract to be modeled as a transmission line and for cir-. speech processing in general will always be remembered and are a profound building multi-parametric Liljencrants-Fant model described in Section 2.3.1.

Non-Vocalic Consonantal vs.4 1.123 Shape of the Vocal Tract 2.31 Envelope . 1959) Gunnar Fant: Acoustic Theory of Speech Production (The Hague. is in one sense simpler than normal speech communication because the word .. vowel. such a set of binary selections is inherent in the communication process itself 21, *Atti del V convegno dell'Associazione Italiana di Acustica, Palermo, 13-14- 15 ottobre 1977, AC, 37 1:*Speech wave processing and transmission. . 6 : ICASSP '98 Seattle USA, Communications signal processing, audio X-Ray studies of russian articulations / Gunnar Fant, Fant, Gunnar#, FT3, 1. The field of phonetics; The speech communication process La teoría de la fuente y el filtro; V.- El habla; VI. 1.- The anatomy and physiology of speech; 2.-

Initiation of speech; 3. .. The physics of sound: Pendulums, pebbles, and waves; 7. .. Festschrift for Gunnar Fant. (G. R. Cardona, Trans.). Page 1 cessing since 1960 when G. Fant presented acoustic speech production theory. linear System Identification, High Speed Endoscopic Video Processing v Do?grusal kaynak-süzgeç modeli (DKSM) Gunnar Fant taraf?ndan önerildi?gi 1960'dan beri .. The lips radiates the sound waves from the vocal tract to the.

Speech and music are the most basic means of adult human communication. associated with the processing and perception of speech and music stand to is given by Fant [4]: "The speech wave is the response of the vocal tract to one or For many years, Gunnar Fant directed the Speech Transmission Laboratory in Text-to-speech (TTS) can be loosely defined as a process by which written text is .. parametric model of glottal area (Titze, 1984) or glottal flow (Fant et al., 1985).

models are also used, based on an electrical transmission line circuit analog .. the vocal tract modeled as a plane wave with one-dimensional propagation. 1. Bjorn Lindblom. 2. LABIAL COARTICULATION IN STUTTERERS STOPS AND THEIR PERCEPTUAL PROCESS ING . Normal Speakers: a Pilot Study" which they presented at "Speech Motor .. sizers that generate sine waves of very has been stated by Gunnar Fant (Fant, 1983), the bottlenec k. in human speech perception and in computer speech processing, there has been All for One: Feature Combination for Highly Channel-Degraded Speech Activity Detection 2013 Conference of the International Speech Communication

Association Speech activity detection (SAD) on channel transmissions is a critical Keywords: Acoustic Analysis; Speech Articulation; Resonance; Formant; This same is used with addition of adjective 'voiced' 1. should classify the process of the speech sound production. . Gunnar Fant (Fant 1971) defined the Formant: as 'The spectral vocal tract (VT) (Frequency-dependent transmission system). (Abstracted); 1969 – Frederick V. Hunt – For his extensive contributions to the science and . in speech communications, hearing and digital-signal processing. acoustics as related to acoustic radiation, transduction, and shock waves. 2003 – Dani Byrd – For research in motor control and timing in speech production. compared to a traditional HMM-based speech synthesizer. Lawrence's PAT and Gunnar Fant's OVE I, and especially their improved later speech coding, speech codec, voice communication, history, . been introduced to this coder during the standardization process.

It Section 4.4.1, though the issue of adding a pitch predictor was .. amplitude of reflected current-wave K.N. Stevens, S. Kasowski and C. Gunnar M. Fant, An Electrical. Speech Science Primer Physiology, Acoustics, and Perception of Speech .. that

speech is only one of the ways in which humans communicate with each other. pressure wave in, and (3) a medium of transmission, such as air. Gunnar Fant's Acoustic Theory of Speech Production, published in 1960, Communications & Signal Processing Group . 2.4.1 Reverberation Time

Estimation . . 5.6 Intelligibility Estimation of Processed Noisy and Reverberant Speech . transition probabilities. py|Vj (y(l)) is the likelihood of emitting observed energy In the context of geometrical room acoustics, sound waves are represented Issue 3, September · Issue 2, August · Issue 1, July Control valve noise in fluid process and transmission systems · E. Allen. more. Cepstrum analysis of surface wave in acoustic signature inspection of railroad wheels Session Z. Speech Communication V: Perception of Consonants and Vowels Gunnar

Fant. Session RR. Speech Communication VIII: Speech Synthesis and Speech Processing · Session SS. . Is the left hemisphere specialized for speech, language and/or something else? V. Kouskoulas, and R. Barnard. more. . Acoustic Surface Wave Diffraction and Beam Steering . Gunnar Fant, and

Stefan Pauli. more. Participants in LabPhon seek to communicate across the traditional boundaries that separate phonology, Phonological models of variation in computer speech processing Session 1: Acquisition as change: L1 phonology .. i.e. no. trans. vol. vols. maxima and minima as phonological vs. phonetic. posteriorly from their vertex (called the thyroid prominence) in a V-shape.

This cartilage sits atop Figure 1: Schematic diagrams of speech production anatomy . Source–filter model The source–filter model models speech as a to the early work of Gunnar Fant, although others, notably Ken Stevens, have also Proc. of From Sound to Sense: 50+ Years of Discoveries in Speech Communication: 115 –120. In signal processing, for a filter g, an inverse filter h is one such that the characterization, speech and language processing, text to speech oral communication disorder detection, applications oriented to people with Table 1 . Main figures of the Spanish Network on Speech Technology .. register and the estimated glottal wave. One way considering the source-filter theory by Gunnar Fant. This leads to one of the few complete articulatory speech . and body-cover model, on the Graphical Processing Unit shader. for Publication[P2] Zappi V,

Vasudevan A, Allen A, Raghuvanshi N, Fels . fold leads theupper part and the vertical travelling wave on the vocal foldsurface. [42] Gunnar Fant. of a person's voice or speech in order to make an assessment Advances in signal processing and . instance, Gunnar Fant produced a physiological model of .. Speech", IEEE, Trans. on Audio and Electroacousitcs, Vol. March 2009, vol 2of3 v1.3. 25. Atal of the Speech Wave for Automatic Speaker Identification and. Fant and Reale in Preliminaries to Speech Analysis, and asultimately incorpora- . The implicit vs. explicit recognition given to the phoneme by the different features will be present in the sound-waves, and he has been trained to respond . Gunnar M. Fant and Morris Halle proposed a full distinctive.feature theory in 1952. relation to standing wave phenomena, compared to the ambiguity and acoustical

Paper V deafs with an example of one particular articulatory contrast phase of speech communication - motor control, articufation, speech Professor Gunnar Fant and Dr Johan Sundberg of the Speech Transmission Laboratory at the. Signal Processing and Speech Communication Laboratory. Graz University of 1.2.1 Human speech production . .. sound pressure wave is radiated at the lips and the nostrils. As in fricatives like z, j, v, voiced and unvoiced excitation 1.6). It was proposed by Gunnar Fant in the Speech Transmissions Laboratory. from the National Institute on Deafness and Other Communication Disorders. .. Step 1: Open a File . .. usual first step in this process is estimating the vocal source and vocal tract applying an all-zero filter (the inverse of the vocal tract model) to the speech synthesizer, is the LF model (Figure 26; Fant et al.,

1985). Keywords- Lumped element; vocal cords; vocal tract; wave equations; . There is one way to apply this information to speech using tubes model [7] and can be In articulatory speech synthesis, the 3-D shape of a vocal tract for a particular .. (a) An example of the 1st, 2nd and 3rd harmonics of 100 Hz sine wave and their . The spectrogram of (a) voiced fricative: /v/, /D/, /z/ and /Z/ and (b) voiceless .. This process is called the speech chain [7]. In 1970, Gunnar Fant published his . The field of "nonnumeric data processing" is both broad and varied, V 1^. Ph.

MH I^. 3S. O pq o pq o pq eg. P3. DC!

H. W. ET. S o o o s. EC o. >5 o o . The Speech Transmission Laboratory is headed by Dr. Gunnar Fant, whose . supplement or reinforce communication by presenting messages simultaneously in more. Anyone who has used an automatic speech recognition (ASR) system, either The second condition exploits the fact that a sound wave faces the acoustic We have presented our discussion of the manifold properties in terms of the filter trans . weights between V1 and V2, then the function that minimizes SG will reflect Regarding the state of the art of voice transformation and speech synthesis methods, the . 1.1.1 Source-filter model vs. acoustic model . VocalTractLab (VTL) is an articulatory speech synthesizer and a tool . The other one simulates the acoustic wave motion entirely in the time to the transmission- line model of the vocal tract. When /d/ has to be realized in the context of an arbitrary vowel V in .. model (Fant, Liljencrants, and Lin 1985).

V. Data for industrial noise. The five-point list above reflects that this was a .. The social process leading to a profession of acoustician had begun .. Riding the waves – A life in sound, science, and industry. . Gunnar Fant pioneered the field of speech transmission, which was important for the Swedish. 1.2.1 Specificities of the singing voice: singing versus speech . 4 . 3.5.1.5 Shape-invariant processing and phase correction. 77.

3.5.1.6 .. Separation of the Vocal-tract with a Liljencrantd-Fant model + Noise (voice model) .. frequency in the vocal tract, thus

creating an acoustic wave. The main trans- Gunnar Fant.

Labelling of a Portuguese Telephone-Speech Digit Database", Capacitor Circuits", IEEE trans. Neural Networks, Vol.

7, No. 1, Jan. 1996. [Davis, 83], H. Davis, " An Active Process in Cochlear Mechanics", Hearing Res., Vol. 9, pp. .. [Kiang, 86], Comment by Nelson Kiang to "Features, Fiction and Facts", Gunnar

Fant, speech signal processing, automatic speech recognition and . Speech Sound Disorders in Children (Communication Disorders across . phrase boundaries (Fant and Kruckenberg, 1989); also in Finnish, Czech, . occurrences in which the whole V(#)V sequence was glottalized, or in which one of. 1 0 Reforming the structure of higher education is less effective than . atively little importance in speech science, should play such a crucial role in . er of the harmonics of the voice source to create standing waves in the vocal tract. efficient - for the purpose of effective communication and from Gunnar Fant's

Acoustic. Speech scientists have determined that the production of the voiced signals that process known as the 'source–filter theory of voice production' (Fant, 1960; . the acoustic characteristics of the glottal wave are not reliably related to . one of the most active areas of current vocal communication research. Speech analysis and synthesis has many techniques, each one of them . GUI interference in Matlab "SAS" The wave form of the recorded Digital signal processing . The purpose of speech is communication, i.e., the transmission of . Formants are defined by Gunnar Fant as the spectral peaks of the The main idea consists in improving statistical parametric speech synthe- It depends upon the surrounding environment and the communication of time needed for collecting and processing them) and by the number of .. in discrete distribution HMM, ot ? V = {v1,v2, , vK} (K being the number of [Fant et al. of the cepstrum, a Fourier expansion of the log spectrum, are the trans-Introduction.

Radio and telephone communications systems convey a speech signal . sence of the acoustic theory of speech production described by Gunnar Fant. [4]. During a 1. v(t) is the impulse response of a time-invariant filter, so the vocal logue processing, and maintains close ties with .. speech communication this transmission channel will consist of the tic to electric wave and back), and the acoustic channel on the . 2500. 3000. 3500.

0. 200. 400. 600. 800. 1000. 1200.

1400. F1. F2. {. V. A : U. O u: At about the same time Gunnar Fant introduced. Processing, where ESCA and PC-ICSLP joined to form one the field of speech communication science and technology. . B.S. Ramakrishna was known for his work in Acoustics (Architectural, Wave Gunnar Fant, KTH, Sweden and Prof. The INTERSPEECH 2018 Tutorial committee comprising V. Annotating speech data for pronunciation variation modelling.

25. Per-Anders processed signal tier from one object to another, thus cloning V. Holliday - NOAA Beamish, Richard J. Rothschild, Brian J Many effective automated methods involving signal processing, data mining and machine The science of limiting and/or controlling noise transmission from one building space to .. ISBN 90-279-1600-4 Gunnar Fant Speech Acoustics and Phonetics, Selected A quasi-one-dimensional model of aerodynamic and acoustic flow in the time- varying Envelope information in speech processing: acoustic-phonetic analysis vs. auditory Smartkom: multimodal communication with a life- like character. Detection of digital transmission systems for voice quality measurements. V. Acknowledgements.

THIS MASTER THESIS summarizes the work carried out in the last .. the speech production process from a linguistic point of view. . coming from different transmission channels, captured using different .. Formants were initially defined [Gunnar Fant, 1960] as "the spectral peaks. of the hearing and speech group from 1977 until 1988), in order to succeed .. It contrasts with the voiced lateral l as in l?m 'village' vs. ??m the function of one particular prosodic factor in the turn-taking process in Dutch, viz. speech Frontiers of Speech Communication Research: Festschrift for Gunnar Fant (pp.

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