Curriculum Vitae

Name:	David Alexander van Leeuwen
Date of birth:	7 January 1966
Place of birth:	Nijmegen, the Netherlands
Address:	Timorstraat 8 3818 CL Amersfoort The Netherlands
Telephone:	+31 681 888 702

E-mail: david.vanleeuwen@gmail.com

Profile and ambition

Having been educated as a physicist, I have moved into the area of Computer Science, specifically Machine Learning applied to Speech Technology. My main drive for operating in research is the desire for understanding. After having studied and contributed to the technical areas of speech research, I feel I am now also very effective supervising the next generation of researchers and engineers. My ambition is to extend my position as a senior researcher to leading a larger group in a university or research institute. As such, I want to utilize my strong international network to continue to carry out state of the art research.

Employment

2012–now	Professor "Forensic applications of Speech and Language Technology" at the Radboud University Nijmegen.
2011–now	Forensic Scientist at the Netherlands Forensics Institute, studying the application of automatic speaker recognition systems to forensic voice comparison and other audio processing technologies.
2010–now	Founder of "strApps"—development of Science, Research and Technology Apps for mobile devices.
2008–2011:	Professor "Speech Technology and its Applications" at the Radboud University Nijmegen, Scientific coordinator of the "BBfor2" EU FP7 Marie Curie Initial Training Network.
2008:	Visiting researcher at the International Computer Science Institute, Berkeley, CA. Carried out a human benchmark of automatic language recognition technologies.
2002–2006:	Founder and owner of *Elseware Linux Oplossingen*, a Linux-based computing infrastructure solution provider.
1994–2011:	Senior Researcher at TNO Human Factors Research Institute, Netherlands, Cognitive Systems Engineering department. Particular areas of research include automatic speaker and language recognition, large vocabulary speech recognition, evaluation and acoustic event detection.
1994:	Coordinator of the automation group of the Institute for Dutch Lexicology in Leiden.

Education

1993:	Ph. D. Graduation. The title of the thesis is *"Magnetic Moments in Metalcluster Molecules."*
1989–1993	Ph. D. student with the Solid State and Materials Physics group under Professor de Jongh at the University of Leiden in the Netherlands.
1984–1988:	Undergraduate degree in Applied Physics at Delft University of Technology. Graduated with honours, 'Doctoraal' exam, Master's level.
1978–1984:	Secondary school "St. Stanislascollege" in Delft, Netherlands.

Work Experience and Selected Projects

2011: iSTI Pro	Development of the "iSTI Professional' iPhone App, implementing the Speech Transmission Index (STI) measurement algorithm according to the IEC standard 60268-16, 4th edition.

2009–now: BBfor2	Project Acquisitor and Scientific Coordinator of the European Union seventh Framework Programme Marie Curie Initial Training Network "Bayesian Biometrics for forensics" (EU FP7 BBfor2). Responsible for the project as a whole, as well as scientific content of the work carried out by 15 PhD students and Postdocs in a European network of nine research institutes, and direct supervisor of several PhD students and Postdocs in the Network.
2009: ADABTS	Senior Scientist in the EU FP7 project that is developing automatic detection of abnormal behaviour of individuals and crowds (ADABTS). Responsible for the acoustic sensing technologies, ranging from recording, sound source localization and enhancement, to the automatic detection of acoustic events.
2008–now: BATS	Supervisor of a Postdoc in an ICTRegie/IBBT project, aiming at making it possible to search large audiovisual archives based on the speaker identity (BATS).
2006–2008: N-Best	Acquisitor and Coordinator of the Dutch Language Union STEVIN project N-Best: Northern and Southern Dutch Benchmark Evaluation of Speech recognition Technology. Responsibilities included overall project management, scientific management and dissemination, evaluation design and execution and acquisition of participants.
2005–2009: MultimediaN	Supervisor of Khiet Truong, PhD student in the BSIK MultimediaN project. This project's aim was to perform automatic emotion detection in speech.
2003–2009: AMI–AMIDA	Participant in two EU FP6 projects dealing with automatic processing of meeting recordings (AMI, AMIDA). Responsibilities included technical infrastructure of recordings of meetings at TNO Human Factors, development and benchmarking of a speaker diarization system—a system that automatically tracks *who* speaks *when* in a multi-party interaction scenario.
2003–2010: NIST LRE, RT SRE Evalita	Participant in several technology evaluations, including all National Institute of Standards and Technology (NIST) Speaker Recognition 2003–2010, NIST Language Recognition 2005–2009, NIST Rich Transcription 2005-2009 and Evalita speaker recognition 2009. A team effort with Brno University of Technology and Spescom DataVoice in 2006 resulted in best performance. Also instrumental party in establishment of evaluation metrics.
2003: ASO	Coordinator of the Netherlands Forensic Institute (NFI)-TNO Forensic Speaker Recognition Evaluation, in collaboration with the NFI. This is the first international evaluation of speaker recognition systems involving real wire-tapped telephony data ever. Responsibilities included project management, recruitment of participating systems, design and execution of the evaluation, and dissemination of results.
2001: Radio 1 demo	Design and implementation of the first live Dutch Spoken Document Retrieval system, recognizing the Dutch channel *Radio 1* on-line and indexing the transcripts for retrieval purposes. This demonstration incorporated technologies of many previously finished projects at TNO, including the Telematica Insitute's Video-over-IP (VIP) and DRUID, and TNO's *Teleleer Oplossingen* (TOP). Used extensively as showcase at open days and acquisition meetings.
1995–1997: SPACT	Participant in a European Space Agency project, implementing a speech interface to ESA's Advanced Crew Terminal (SPACT). Responsibilities included requirements specification, software selection and testing, implementation and training of two cosmonauts in using a spoken dialogue system at the Gagarin Training Centre (a.k.a. "Star City") in Russia.

Lectures and Teaching Experience

- "Forensic Linguistics", undergraduate course, Radboud University Nijmegen
- "Introduction to speech technology", course at the NFI, 2012.
- EAG Medicine course at TNO "Speech technology in the cockpit", 2009, 2010
- NATO lecture series IST-037 LS 238, courses "Large vocabulary speech recognition" and "Evaluation of speech technology" held in Montreal, Paris and Istanbul (2003–2004)
- Guest lectures for Roeland Ordelman (University of Twente), Rosemary Orr (University College Utrecht), Wessel Kraaij and Helen de Hoop (Radboud University Nijmegen)
- Several courses in minors and masters, Radboud University Nijmegen
- Minor course "Speech Technology" for Anita Cremers (Hogeschool Utrecht)

- Invited keynote speaker at the RTTH Summer School (July 2013), Vigo; the Speaker and Language Odyssey (January 2008), Stellenbosch; Pattern Recognition Association of South Africa (November 2008), Cape Town; Computational Linguistics in Flanders (December 2009), Antwerp.

Memberships and Awards

- Member of the board of the Centre for Language and Speech Technology in Nijmegen.
- Representative of the Management Committee in the COST Action IC1106 "Integrating Biometrics and Forensics for the Digital Age."
- Member of EU META-NET Vision Group "Interactive Systems," preparing the research programme of Human Language Technology for FP8.
- Representative of NATO IST-078 Research Task Group "Machine translation for coalition forces," and earlier speech and language technology related research task groups IST-031 and IST-001 of the Research and Technology Organisation of the NATO.
- Member of the working group that authored ETSI ES 202 076 "Human Factors; User Interfaces; Generic spoken command vocabulary for ICT devices and services," a standard of the European Telecommunications Standards Institute, best known for the standardizition of GSM.
- Member of the Institute of Electrical and Electronics Engineers (IEEE), IEE Signal Processing Society, and the International Speech Communication Association (ISCA)
- Reviewer for IEEE Transactions on Audio, Speech and Language Processing, IEEE Signal Processing Letters, Computer Speech & Language, ISCA Interspeech, IEEE ICASSP, ACM Multimedia, Speech and Language Recognition Odyssey, and many more conferences and workshops.
- Co-author in best student paper award at Interspeech 2012
- Best paper award at Interspeech 2007
- Best project proposal NFI-TNO cooperation workshop 2001—the award led to the implementation of the NFI-TNO Forensic Speaker Recognition Evaluation (ASO project).
- Selected for the Weizmann Institute of Science summer camp, 1984.

Other Skills

- Organizing and hosting the conference "Biometric Technologies in Forensic Science" (BTFS 2013, Nijmegen), co-chaired the workshop "BENELEARN" (2013, Nijmegen), organized the "Workshop on the assessment of forensic LR-based evaluation methods" at EAFS (2012, Den Haag), Organized and hosted the workshop Machine Learning for Multimodal Interaction (MLMI 2008, Utrecht), co-organized the workshops "Multi-lingual Interoperability in Speech Technology" MIST (Leusden) and the Speech Transmission Index (STI) symposium (Soesterberg).
- Three years chairman of the Personnel Society TNO Human Factors
- iPhone App development
- Author of the Uniform CDrom driver in the Linux kernel (`cdrom.c`) and related additions to the GNU system library `libc`.
- Linux network / system design, TCP/IP, firewalls, cluster operation

Referees

Dr. Arnout Ruifrok
Group leader of Biometry, Netherlands Forensic Institute,
`a.ruifrok@nfi.minvenj.nl`

Prof. dr. Nelson Morgan
Director of the International Computer Science Institute, Berkeley, CA
✆+1 510 666 2900
`morgan@icsi.berkeley.edu`

Prof. dr. Lou Boves
Head of the Language and Speech Technology group, Faculty of Arts,
Radboud University Nijmegen
✆0243612902, cell phone: 0653407170
`L.Boves@let.ru.nl`

Selected List of Publications

Mohamad Hasan Bahari, Rahim Saeidi, H. Van hamme, and David A. van Leeuwen. Accent recognition using i-vector, gaussian mean supervector and gaussian posterior probability supervector for spontaneous telephone speech. In *Proc. ICASSP*, 2013.

E. Khoury, B. Vesnicer, J. Franco-Pedroso, R. Violato, Z. Boulkenafet, L. M. Mazaira Fernandez, M. Diez, J. Kosmala, H. Khemiri, T. Cipr, R. Saeidi, M. Gunther, J. Zganec-Gros, R. Zazo Candil, F. Simoes, M. Bengherabi, A. Alvarez Marquina, M. Penagarikano, A. Abad, M. Boulayemen, P. Schwarz, D. A. van Leeuwen, J. Gonzalez-Dominguez, M. Uliani Neto, E. Boutellaa, P. Gomez Vilda, A. Varona, D. Petrovska-Delacretaz, P. Matejka, J. Gonzalez-Rodriguez, T. Pereira, F. Harizi, L. J. Rodriguez-Fuentes, L. El Shafey, M. Angeloni, G. Bordel, G. Chollet, and S. Marcel. The 2013 speaker recognition evaluation in mobile environment. In *International Conference on Biometrics*, Madrid, 2013. IAPR.

Miranti Indar Mandasari, Rahim Saeidi, Mitchell McLaren, and David A. van Leeuwen. Quality measure functions for calibration of speaker recognition system in various duration conditions. *IEEE Transactions on Acoustics, Speech, and Language Processing*, PP(99), 2013.

David A. van Leeuwen. *Essential Speech and Language Technology for Dutch*, chapter N-Best 2008: a benchmark evaluation for large vocabulary speech recognition in Dutch, pages 271–288. Springer, 2013.

David A. van Leeuwen and Rahim Saeidi. Knowing the non-target speakers: the effect of the i-vector population for PLDA training in speaker recognition. In *Proc ICASSP*, Vancouver, 2013. IEEE.

R. Saeidi, K. A. Lee, T. Kinnunen, T. Hasan, B. Fauve, P.-M. Bousquet, E. Khoury, P. L. Sordo Martinez, J. M. K. Kua, C. H. You, H. Sun, A. Larcher, P. Rajan, V. Hautamaki, C. Hanilci, B. Braithwaite, R. Gonzales-Hautamaki, S. O. Sadjadi, G. Liu, H. Boril, N. Shokouhi, D. Matrouf, L. El Shafey, P. Mowlaee, J. Epps, T. Thiruvaran, D. A. van Leeuwen, B. Ma, H. Li, J. H. L. Hansen, J.-F. Bonastre, S. Marcel, J. Mason, and E. Ambikairajah. I4U submission to NIST SRE 2012: A largescale collaborative effort for noise-robust speaker verification. In *Proc. Interspeech*, 2013.

David A. van Leeuwen and Niko Brümmer. The distribution of calibrated likelihood-ratios in speaker recognition. In *Proc. Interspeech*, pages 1619–1623. ISCA, 2013.

Taufiq Hasan, Rahim Saeidi, John H. L. Hanson, and David A. van Leeuwen. Duration mismatch compensation for i-vector based speaker recognition systems. In *Proc. ICASSP*. IEEE, 2013.

V. Hautamaki, K. A. Lee, R. Saeidi D. A. van Leeuwen, A. Larcher, T. Kinnunen, T. Hasan, S. O. Sadjadi, G. Liu, H. Boril, J. H. L. Hansen, and B. Fauve. Automatic regularization of cross-entropy cost for speaker recognition fusion. In *Proc. Interspeech*, 2013.

David A. van Leeuwen and Mohamad Hasan Bahari. Calibration of probabilistic age recognition. In *Proc. Interspeech*, Portland, 2012. ISCA.

Mohamad Hasan Bahari, Mitchell McLaren, Hugo Van hamme, and David A. van Leeuwen. Age estimation from telephone speech using i-vectors. In *Proc. Interspeech*, Portland, 2012.

Mitchell McLaren and David A. van Leeuwen. Gender-independent speaker recognition using source normalization. In *Proc. ICASSP*, Kyoto, March 2012. IEEE.

Mitchell McLaren and David A. van Leeuwen. Source-normalised LDA for robust speaker recognition using i-vectors from multiple speech sources. *IEEE Transactions on Audio, Speech and Language Processing*, 20(3):755—766, March 2012.

Mitchell McLaren and David A. van Leeuwen. Source normalization for language-independent speaker recognition using i-vectors. In *Proc. Odyssey 2012: The Speaker and Language Recognition Workshop*, pages 55–61, Singapore, 2012. ISCA.

M. McLaren and D. A. van Leeuwen. A simple and effective speech activity detection algorithm for telephone and microphone speech. In *Proc. NIST SRE 2011 workshop*, Atlanta, US, December 2011.

Miranti Indar Mandasari, Mitchell McLaren, and David A. van Leeuwen. The effect of noise on modern automatic speaker recognition systems. In *Proc. ICASSP*, Kyoto, March 2012. IEEE.

Khiet P. Truong, David A. van Leeuwen, and F. M. G. de Jong. Speech-based recognition of self-reported and observed emotion in a dimensional space. *Speech Communication*, 54:1049–1063, 2012.

David van Leeuwen. *Speech and Audio Signal Processing*, chapter Speaker Recognition, pages 633–643. John Wiley & Sons, 2 edition, September 2011.

Marijn Huijbregts and David A. van Leeuwen. Diarization-based speaker retrieval for broadcast television archives. In *Proc. Interspeech*, Firenze, August 2011. ISCA.

Miranti Indar Mandasari, Mitchell McLaren, and David A. van Leeuwen. Evaluation of i-vector speaker recognition systems for forensic application. In *Proc. Insterspeech*, Firenze, August 2011. ISCA.

Marijn Huijbregts, Mitchell McLaren, and David A. van Leeuwen. Unsupervised acoustic sub-word unit detection for query-by-example spoken term detection. In *Proc. ICASSP*, Prague, May 2011. IEEE.

Marijn Huijbregts and David A. van Leeuwen. Large scale speaker diarization for long recordings and small collections. *Audio, Speech, and Language Processing, IEEE Transactions on*, 20(2):404–413, 2012.

Marijn Huijbregts, David A. van Leeuwen, and Chuck Wooters. Speaker diarization error analysis using oracle components. *Audio, Speech, and Language Processing, IEEE Transactions on*, 20(2):393–403, February 2012.

Iulia Lefter, Leon J. M. Rothkrantz, David A. van Leeuwen, and Pascal Wiggers. Automatic stress detection in emergency (telephone) calls. *Int. J. Intelligent Defence Support Systems*, 4(2):148–168, 2011.

David A. van Leeuwen and Niko Brümmer. A speaker line-up for the likelihood ratio. In *Proc. Interspeech*, Firenze, August 2011. ISCA.

Mitchell McLaren and David A. van Leeuwen. Improved speaker recognition when using i-vectors from multiple speech sources. In *Proc. ICASSP*, Prague, 2011. IEEE.

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Rosemary Orr, Hugo Quené, Roeland van Beek, Thari Diefenbach, David A. van Leeuwen, and Marijn Huijbregts. An international English speech corpus for longitudinal study of accent development. In *Proc. Interspeech*. ISCA, August 2011.

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Iulia Lefter, Leon Rothkrantz, Pascal Wiggers, and David van Leeuwen. Emotion recognition from speech by combining databases and fusion of classifiers. In Petr Sojka, Aleš Horák, Ivan Kopecek, and Karel Pala, editors, *Text, Speech and Dialogue*, volume 6231 of *Lecture Notes in Computer Science*, pages 353–360. Springer Berlin / Heidelberg, 2010.

David A. van Leeuwen. Speaker linking in large data sets. In *Proc. Odyssey*, pages 202–208. IEEE, June 2010.

Marijn Huijbregts and David A. van Leeuwen. The RU submission to the EVALITA "application track" speaker recognition evaluation. In *Evalita Workshop*, 2009.

Marijn Huijbregts, David van Leeuwen, and Franciska de Jong. Speech overlap detection in a two-pass speaker diarization system. In *Proc. Interspeech*, pages 1063–1066, Brighton, September 2009. ISCA.

Marijn Huijbregts, David van Leeuwen, and Franciska de Jong. The majority wins: a method for combining speaker diarization systems. In *Proc. Interspeech*, pages 924–927, Brighton, September 2009. ISCA.

David A. van Leeuwen, Judith Kessens, Eric Sanders, and Henk van den Heuvel. Results of the N-Best 2008 Dutch speech recognition evaluation. In *Proc. Interspeech*, pages 2571–2574, Brighton, September 2009. ISCA.

Rosemary Orr and David van Leeuwen. A human benchmark for language recognition. In *Proc. Interspeech*, pages 2175–2178, Brighton, September 2009. ISCA.

David A. van Leeuwen. Overall performance metrics for multi-condition speaker recognition evaluations. In *Proc. Interspeech*, pages 908–911, Brighton, September 2009. ISCA.

Khiet P. Truong, David A. van Leeuwen, Mark A. Neerincx, and Franciska M. G. de Jong. Arousal and valence prediction in spontaneous emotional speech: felt versus perceived emotion. In *Proc. Interspeech*, pages 2027–2030, Brighton, September 2009. ISCA.

Gerald Friedland and David A. van Leeuwen. *Semantic Computing*, chapter Speaker Recognition and Diarization. Wiley, july 2010.

David A. van Leeuwen, Michaël de Boer, and Rosemary Orr. A human benchmark for the NIST language recognition evaluation 2005. In *Proc. Speaker and Language Odyssey*, Stellenbosch, South Afrika, 2008. IEEE.

David A. van Leeuwen. Evaluation plan for the North- and south-dutch Benchmark Evaluation of Speech recognition Technology (N-Best 2008).
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Mark A. Neerincx, Anita H.M. Cremers, Judith M. Kessens, David A. van Leeuwen, and Khiet P. Truong. Attuning speech-enabled interfaces to user and context for inclusive design: Technology, methodology and practice. *Universal Access in the Information Society*, 108(2):109–122, 2008.

Stephane Pigeon, Wade Shen, Aaron Lawson, and David A. van Leeuwen. Design and characterization of the non-native military air traffic communications database (nnMATC). In *Proc. Interspeech*, pages 2417–2420, Antwerp, August 2007. ISCA.

David A. van Leeuwen. A note on performance metrics for speaker recognition using multiple conditions in an evaluation. In *NIST SRE Workshop*, Montreal, 2008. NIST.

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David A. van Leeuwen. SRE-tools, a software package for calculating performance metrics for NIST speaker recognition evaluations. `http://sretools.googlepages.com/`, 2008.

David A. van Leeuwen. The tno sre-2008 speaker recognition system. In *Proceedings of the NIST Speaker Recognition Evaluation Workshop*, Montreal, 2008.

Khiet P. Truong, Mark A. Neerincx, and David A. van Leeuwen. Assessing agreement of observer- and self-annotations in spontaneous multimodal emotion data. In *Proc. Interspeech*, Brisbane, 2008. ISCA.

Khiet Truong, Mark Neerincx, and David van Leeuwen. Measuring spontaneous vocal and facial emotion expressions in real world environments. In *Proc. Measuring Behaviour*, Maastricht, 2008.

W. A. Melder, K. P. Truong, M. den Uyl, David A. van Leeuwen, M. A. Neerincx, L. R. Loos, and B. Stock Plum. Affective multimodal mirror: sensing and eliciting laughter. In *Proc. HCM*, pages 31–39, Amsterdam, 2007.

Marc Al-Hames, Thomas Hain, Jan Cernocky, Sascha Schreiber, Mannes Poel, Ronald Müller, Sebastien Marcel, David van Leeuwen, J-M. Odobez, Sileye O. Ba, Hervé Bourlard, Fabien Cardinaux, Daniel Gatica-Perez, Adam Janin, Petr Motlicek, Stephan Reiter, Steve Renals, Jeroen van Rest, Rutger Rienks, Gerhard Rigoll, Kevin Smith, Andrew Thean, and Pavel Zemcik. Audio-visual processing in meetings: Seven questions and current AMI answers. In *MLMI 2006, 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms*, volume 4299 of *Lecture Notes in Computer Science*, pages 24–35, London, 2007. Springer.

David A. van Leeuwen and Niko Brümmer. An introduction to application-independent evaluation of speaker recognition systems. In Christian Müller, editor, *Speaker Classification*, volume 4343 of *Lecture Notes in Computer Science / Artificial Intelligence*. Springer, 2007.

Thomas Hain, Lukas Burget, Martin Karafiat, John Dines, David A. van Leeuwen, Giulia Garau, Mike Lincoln, and Vincent Wan. AMI/DA STT and SASTT 2007. In *Proceedings of the RT07 Workshop 2007*, May 2007.

Niko Brümmer, Lukáš Burget, Jan Černocký, Ondřey Glembek, František Grezl, Martin Karafiát, Pavel Matějka, David A. van Leeuwen, Petr Schwarz, and Albert Strassheim. Fusion of heterogeneous speaker recognition systems in the STBU submission for the NIST speaker recognition evaluation 2006. *IEEE Transactions on Speech, Audio and Language Processing*, 15(7):2072–2084, 2007.

Judith Kessens and David van Leeuwen. N-Best: The Northern and southern dutch Benchmark Evaluation of Speech recognition Technology. In *Proc. Interspeech*, pages 1354–1357, Antwerp, August 2007. ISCA.

David A. van Leeuwen and Khiet P. Truong. An open-set detection evaluation methodology applied to language and emotion recognition. In *Proc. Interspeech*, pages 338–341, Antwerp, August 2007. ISCA.

Khiet P. Truong and David A. van Leeuwen. Evaluating automatic laughter segmentation in meetings using acoustic and acoustic-phonetic features. In *Proc. Phonetics of Laughter*, pages 49–53, Saarbrücken, 2007.

Pavel Matějka, Lukáš Burget, Petr Schwarz, Ondřej Glembek, Martin Karafiát, Jan Černocký, David A. van Leeuwen, Niko Brümmer, Albert Strasheim, and František Grézl. STBU system for the NIST 2006 speaker recognition evaluation. In *Proc. ICASSP*, pages 221–224, 2007.

Khiet P. Truong and David A. van Leeuwen. An 'open-set' detection evaluation methodology for automatic emotion recognition in speech. In *Proc. ParaLing*, Saarbrücken, 2007.

David A. van Leeuwen and Matej Konečný. Progress in the AMIDA speaker diarization system for meeting data. In *Machine Learning for Multimodal Interaction*, Lecture Notes in Computer Science. Springer, 2007.

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Niko Brümmer and David A. van Leeuwen. On calibration of language recognition scores. In *Proc. Odyssey 2006 Speaker and Language recognition workshop*, San Juan, June 2006.

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David A. van Leeuwen and Marijn Huijbregts. The AMI speaker diarization system for NIST RT06s meeting data. In *Machine Learning for Multimodal Interaction*, volume 4299 of *Lecture Notes in Computer Science*, pages 371–384. Springer, 2006.

David A. van Leeuwen, Alvin F. Martin, Mark A. Przybocki, and Jos S. Bouten. NIST and NFI-TNO evaluations of automatic speaker recognition. *Computer Speech and Language*, 20:128–158, 2006.

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