Arjan van Hessen

Education

After his secondary school Arjan van Hessen started to study Geophysics and Italian language and culture (1980) at Utrecht University in 1976. After these two studies and the (forfeited) military service, he started in 1986 his PhD research at the Phonetic Institute in Utrecht. In 1992, he defended his dissertation entitled: "Discrimination of familiar and unfamiliar speech sounds".

Work

From 1991 to 1993 he worked in the Verbmobil research programme at the universities of Dusseldorf and Ulm (Germany).
After a brief return at the Utrecht University as a post-doc (1993/1994), he left for the Belgium company Lernout&Hauspie (1995 - 1997).

In 1997 he returned to the Netherlands as a researcher at the HMI department of the University of Twente and as a manager of speech technology at ComSys in Soesterberg: a SME-company specialising in IVR applications.

In 2002, he moved from Comsys to Telecats (also a SME), where he worked since as Head of Imagination.

At the University of Twente, he is mainly involved in the research and development of opening up large, spoken corpora such as Radio and TV recordings, historical and contemporary interviews.
At Telecats, the market leader in the Netherlands in the field of voice telephony applications, he is mainly involved in incorporating academic knowledge within the company, developing new voice-controlled applications and broadening Telecats' portfolio.

From 2009 to 2015, he was on the executive board of CLARIN-NL: a 6-year infrastructure programme (€9M) that aims to create a good, robust and standardized infrastructure, including a. o. To develop language and speech technology for the humanities (both in the Netherlands (CLARIN-NL) and in Europe (CLARIN. EU). He was also a member of the CLARIN-EU' s' office team', including the PR and website. On behalf of CLARIN-NL, he is a member of the CLARIN-EU's legal working group.

From 2011 to 2013, he was an employee of the CLARIN-EU Office Team: responsible for the PR and the Website.

Since spring 2014, he has been involved in the CLARIAH infrastructure programme (€12.5M) as a Director of User Involvement. CLARIAH is the successor to CLARIN and will focus not only on text but also on audio-visual data and structured data.

Teaching

Regular classes

Since I joined the University of Twente in 1998, I have been teaching the Language & Speech Technology course every autumn. Initially on my own, but in recent years together with colleagues. The focus of my part is partly on signal processing, partly on phonetics: how people hear and speak.

Guest lectures

In addition, since 2010 I have been giving a yearly guest lecture on language and speech technology at Utrecht University of Applied Sciences and, since 2013, a similar lecture for material students at Utrecht University. I am also guest lecturer HLT at the School for Customer Management (HBO).

Workshops

The last years I'm involved in workshops in the field of applied TST for e. g. Oral History. Below are a few workshops to which I contributed.

Title	Description
Making Sense of Digital Spaghetti	Workshop coding for bachelor students of the Utrecht University College and the Humanity Cluster of the Utrecht University.
Workshop KITLV	Assisting in the workshop of Stef Scagliola for the KITLV.
TST voor archieven	Workshop in Schiedam for the Dutch OH-community about the possibilities of Human Language Technology. Together with Stef Scagliola.
OH & HLT	Workshop during the Radboud Spring School.
OH & Technology	Workshop during the DHBenelux 2017 conference in Utrecht

Projecten

JusticeSpeechRecognition: At the request of the Council of the Judiciary, the project RechtSpraakHerkenning was carried out within the framework of the Stevin programme (2009) by Telecats and the District Court of Almelo. The aim was to investigate the extent to which ASR could be used to improve and lighten the work of clerks. The project has been successful, but speech recognition was not used because the law does not allow it to "just" make recordings in the courtroom. This was known in advance and the project was therefore mainly meant to see to what extent it **could** be useful.

Witness Stories: Heritage of the War. For two years I was a member of the Oral History Project Support Committee for the ministry of VWS in the context of the War Project Heritage. The project's aim was to make as many and varied interviews as possible with still living witnesses of the Second World War. Because interviews were designed to make them suitable for speech recognition/forced alignment, a set of requirements was drawn up that the interviews had to meet. At the end of the project (2015) more than 600 interviews were subtitled by DANS, NIOD, Telecats and UTwente using ASR. Currently, Witness stories is the largest Dutch OH project.

Croatian Memories: In 2009, the MATRA proposal was honoured by the Dutch Ministry of Foreign Affairs. The aim of the project was to get a balanced picture of the extent to which the different population groups in Croatia had suffered during the separation war by means of 600 interviews and to initiate a process of reconsiliation by means of these interviews. All the interviews, which ended up being "only" 400 interviews, were transcribed, translated into English, dated. The CroMe project, carried out by the UTwente and Documenta, can be seen as one of the first major OH projects in the new Croatia.

Bosnian Memories: In 2010, a copy of the CroMe project was set up in Bosnia, this time paid for by the Dutch Embassy in Bosnia. This involved 100 interviews, 99 of which were conducted. The BiHMe project carried out by the UTwente in

collaboration with the Center for Investigative Reporting (CIN) and the University of Sarajevo - Human Right Center.

In 2010, after 5 years of preliminary investigation and testing, speech recognition for the 8844 police number was installed. The investigation into voice recognition was done by the UTwente in collaboration with Telecats. The biggest challenge was not to recognise speech as such, but above all to convince the police management of the fact that it did not violate the slogan "Police work is People's Work".

Amersfoort camp. In 2011, as a result of the Witness Stories Project, Kamp Amersfoort asked for help in transcribing the more than 100 interviews with former prisoners of the former camp Amersfoort. The project will be delivered in 2017:100 m with voice recognition transcribed interviews (> 150 hours). The collection is stored at DANS.

Subtitling of the Plenary Meetings of the Lower House of Parliament (2014 - now). At the request of the Dutch Parliament's Reporting and Registration Service (DVR), a subtitling street was created, whereby Forced Alignment the Bulletin was automatically converted into subtitles for Debat Gemist. The service automatically uses voice recognition to align the texts created by DVR with the AV recording of sessions.

InterViews. Project proposal for the H2020-EINFRA call (2014-2015) Interview was a project in the field of Oral History that attempted to bring together technology, methodology, storage, virtual research environment and research. The project was rewarded with 14.5 points, but just failed.

The chapter "Voice Recognition" was written for the Dutch Language Scan. The Dutch Language Scanon was awarded the LOT Popularisation Prize in 2014 because, according to the jury, it pre-eminently popularises language science: not only a nice story for laymen, but a fleet chimney that has the potential to generate a genuine and lasting interest in the field of science.

LISTEN: a just-non-executed proposal for the NWO major call of 2014. After the nonhonorisation of the INTERVIEW project, an attempt was made to realise the smaller version by means of a NWO major call. The project was intended to set up a Dutch infrastructure for Oral History.
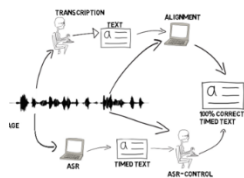
Although the project received a site visit and was well appreciated, the GoldenAgents project was preferred for the humanities sciences.

FIODspraak (2016-2018). A project of the UTwente, Telecats and the FIOD to deploy Language and Speak Technology for a better and more efficient way of reporting interrogation. The current practice of interrogation in which 2 investigators testify and interview experts is no longer valid today. An official asks the questions and the other person notes the question and the answers given. However, a lot of information is missing during the writing process, and in addition, the suspect's "narrative fashion" is often interrupted. Integral recording of everything and getting all speech through the recognizer should increase both the efficiency and quality of the interrogations. The project will be completed in 2018. In addition to the FIOD, the National Police, the NFI, the KMar and the IND are also already involved in interested parties. The project is financed by the NCTV.

Spreek2Schrijf. Telecats, together with the CLST of Radboud University of the DVR of the Lower House of Parliament, has been commissioned by Telecats to investigate the extent to which a translation tool can be created that can convert spoken speech into written speech. The spoken speech is the result of the speech recognised with ASR in the plenary room of the Lower House of Parliament, the spoken speech is the Acts as created by the DVR. The project runs from the beginning to the end of 2017.

Oral History Transcription Chain. Within the framework of the CLARIN ERIC programme Workshop for Proposal, two workshops (Utrecht and Arezzo) were organised in 2016 and 2017 to develop a proposal to create a Transcription Chain for Oral History researchers within the CLARIN community. The application for the workshops was honoured and the proposal was offered. If honoured, the Transcription Chain will be realised in 2017. The purpose of the Chain is to enable OH researchers to get their AV material through a suitable ASR engine to automatically produce a rough transcription. These rough transcriptions can then be corrected within the same Chain. Detailed information can be found on the website of Oral History and Technology. The application for the workshops and the proposal was made by the UTwente, Radboud University and the University of Siena.

Publications

Academic
Book: 'CLARIN in the Low Countries' book edt.
Jan Odijk & Arjan van Hessen

Article: Sprekend Nederland: a heterogeneous speech data collection
David A Van Leeuwen, Frans Hinskens, Borja Martinovic, Rosemary Orr

Conference Paper: Automated Metadata Extraction for Semantic Access to Spoken Word Archives
F.M.G. de Jong, W.F.L. Heeren, A.J. van Hessen, A. Nijholt

Article: Easy Listening: Spoken Document Retrieval in CHoral
Willemijn Heeren, Laurens van der Werff, Franciska de Jong, Mies Langelaar

Article: Browsing and Searching the Spoken Words of Buchenwald Survivors
R. Ordelman, W. Heeren, A. van Hessen, T. Verschoor

Article: Twnc: a multifaceted Dutch news corpus
Roeland Ordelman, Franciska De Jong, Arjan Van Hessen, Hendri Hondorp

Conference Paper: Radio Oranje: searching the queen's speech(es).
Willemijn Heeren, Laurens van der Werff, Roeland Ordelman, Franciska de Jong

Conference Paper: The role of automated speech and audio analysis in semantic multimedia annotation
F. de Jong, R. Ordelman, A. van Hessen

Article: Audio Indexing Technology for the Exploration of Audiovisual Heritage Collections
Roeland Ordelman, Jong de Franciska, Willemijn Heeren, G. Schwanen

Article: Het Radio Oranje Project 'Googlen' met Hare Majesteit Koningin Wilhelmina
Maas van der Peter, Willemijn Heeren, Hessen van Arjan, P. Spyns

Conference Paper: IR-based classification of customer-agent phone calls
Arjan van Hessen, Jaap Hinke

Conference Paper: Infolink: Analysis of Dutch Broadcast News and Cross-Media Browsing.
Jeroen Morang, Roeland Ordelman, Franciska de Jong, Arjan van Hessen

Article: Compound decomposition in Dutch large vocabulary speech recognition
Arjan Van Hessen, Franciska De Jong

Article: Speech Recognition Issues for Dutch Spoken
Arjan Van Hessen, Franciska De Jong

Article: Lexicon Optimization for Dutch Speech Recognition
Arjan Van Hessen, Franciska De Jong

Article: Improving Recognition Performance Using Co-Articulation
J. F. Ordelman, Arjan J. Van Hessen, David A. Van Leeuwen

Article: The end of categorical perception as we know it
Bert Schouten, Ellen Gerrits, Arjan van Hessen

Conference Paper: Compound decomposition in dutch large vocabulary speech recognition.
Roeland Ordelman, Arjan van Hessen, Franciska de Jong

Article: Speech and Language Interactions in a Web Theatre Environment
Anton Nijholt, Joris Hulstijn, Arjan Van Hessen

Article: Speech and Language Interaction in a (Virtual) Cultural Theatre
Anton Nijholt, Arjan Hessen, J. Hulstijn

Article: A Natural Language Web-based Dialogue
Anton Nijholt, Mathieu Van Den Berk, Arian Van Hessen

Conference Paper: Lexicon Optimization for Dutch Speech Recognition in Spoken Document Retrieval
Roeland Ordelman, Arjan van Hessen, Franciska de Jong

Conference Paper: Speech Recognition Issues for Dutch Spoken Document Retrieval
Roeland Ordelman, Arjan van Hessen, Franciska de Jong

Article: Utterance Generation For Transaction Dialogues
Joris Hulstijn, Arjan Van Hessen

Article: Categorical Perception as a Function of Stimulus Quality
A.J. van Hessen, M.E.H. Schouten

Article: Dealing With Phrase Level Co-Articulation (PLC) In Speech Recognition: A First Approach
J. F. Ordelman, Arjan J. Van Hessen, David A. Van Leeuwen

Conference Paper: Dialogues with a Talking face for Web-based Services and Transactions
Joris Hulstijn, Anton Nijholt, Hendri Hondorp, Arjan van Hessen

Article: Improving Recognition Performance Using Co-Articulation Rules on the Phrase Level: A First Approach
Roeland J. F. Ordelman, Arjan J. van Hessen, David A. van Leeuwen

Article: Response distributions in intensity resolution and speech discrimination
M. E. H. Schouten, A J van Hessen

Article: A natural language web-based dialogue system with a talking face
Anton Nijholt, Berk van den Mathieu, Hessen van Arjan, I. Kopeček

Article: The relationship between auditory filter bandwidth and temporal resolution
M. E. H. Schouten, A. J. van Hessen

Article, May 1995, The Journal of the Acoustical Society of America

Article: Estimating perceptual distributions for endpoint stimuli
M. E. H. Schouten, A. J. van Hessen

Article: Modeling phoneme perception. II: A model of stop consonant discrimination
A J van Hessen, M. E. H. Schouten

Article: Modeling phoneme perception. I: Categorical perception
M. E. H. Schouten, A J van Hessen

Conference Paper: Generation of natural sounding speech stimuli by means of linear cepstral interpolation.
Arjan van Hessen

Article: Clustered acoustic modelling in speech recognition
Pieter van Veelen, Marijn Huijbregts, Roeland Ordelman, Arjan van Hessen

Article: Prosody Based Boundary Detection
Marijn Huijbregts, Roeland Ordelman, Arjan van Hessen

Populair (blogs)

Titel	Omschrijving
InterSteno 2017 in Berlin	Report of the IPRS Conference of Stenographers and Parliamentary Reports in Berlin in July 2017
Better Together at the table	Report of "my" 4 tables at the Better Together meeting in The Hague (July 2017). Better Together is a side event of the InterVision conference. It is a meeting of all kinds of specialists working in the field of visually impaired people. The subject of my tables was: HLT for the visually impaired.
Dutch Speech Recognition	Reference blog. Extensive story to make it clear to non-experts what ASR can do today, how it works and what is involved. Often used to raise other fast o altitude of ASR and HLT.
Government Informatie as Open Data	Overview of what is possible with modern HLT for the Open Council Information System as KING envisages.
65 Laywers in the room!	Blog nav a lecture at Kennedy van der Laan about modern HLT and the possible applications within the "legal world". It was a lecture in the context of Jelle van Veen's Dutch Legal Tech Meetup sessions.
Afraid for AI? Radio Broadcast at BNR	Perform at BNR Newsradio "Ask me Anything" after the publication of a code of conduct for AI in order to prevent AI from catching up with us.
Extra rewards for collaboration between scholars and SME's...	Blog about the initiative of State Secretary Dekker to stimulate interaction between the business community and academia by giving employees from the business community the opportunity to promote their work.
Living together with Alexa: how is that?	Blog nav the growing success of the ASR of Amazon's Alexa. How does it work and what can we expect?
(Unexpected) Bias in AI	Blog over the reverse side of AI. AI learns from us, but that also contains dangers. We are not perfect either, so what does AI learn exactly?
Speech Recognition for the Government	Blog nav is an experiment that we did at Telecats: recognising a discussion between Buma (CDA) and Roemer (SP) in the Lower House of Parliament. The test was done to show DVR employees how well ASR works and then to jointly find out whether ASR is already "ready" for use in the Chamber.

[Artificial Intelligence](#)	Reference blog. There is a lot of confusion in the area of AI. Robots and AI are regularly mixed up and the difference between DNN and ML is not clear either. Blog serves as a "reference" article to refer others to for interpretation.
[A wise man from the East: NAO in Enschede](#)	Blog about the arrival and what happened afterwards with robot NAO that was equipped with the latest voice recognition at Telecats..
[Interrogation in a boys' room](#)	On Tuesday evening 12 April 2016 I was a guest at Fast Moving Targets: a "boy's club" of greying gentlemen inviting people to come and talk about an interesting (sic) topic. I would talk about the blessings and possibilities of language and speech technology.

Netwerk

With the increasing potential of language and speech technology (TST) from the 1990s onwards, it became increasingly clear that a more structural cooperation between knowledge institutes in the field of TST, organisations using TST and companies making and developing TST was highly desirable. In 2002, therefore, Stichting NOTaS (Dutch Organisation of Language and Spraaktechnologie) was established. Since 2004, I have been on the board where I am dealing with the PR, Dissemination, Website and the organisation of participant meetings.

In 2004 I became a member of the programme committee and the accompanying activities committee of the Stevin project: a six-year Flemish-Dutch research programme of the Dutch Language Union (€11M). The objective of the Stevin project was to stimulate, anchor and develop Dutch-language language and speech technology, with particular attention to cooperation between academia and industry.

Since 2005, I have been chairman of the (sleeping) Living Memories Foundation: a foundation that aims to preserve the memories of former Indian people through filmed and interviews. The ultimate goal is to keep the interviews easily accessible via a deposition with an existing archive.

From 2006 to 2008, I was involved in the VCN working group Language and Voice Technology in Contact Centres. The working group's objective was to increase the knowledge of TST in the CC world.

Since 2009 I have been involved as a lecturer and member of the board of examiners and nowadays as chairman of the board of examiners in the MBA Customer Management programme of the Hanny Philipse Bussinesschool.

Since 2015, I have served on behalf of CLARIAH as director of E-Data & Research. E-Data aims to provide an overview of the developments in e-research in the Netherlands in the field of Humanities and Social Sciences.

Chairman of the LOT Popularisation Prize 2016. This was a prize for a book, presentation, web-course or something else that best succeeded in making research into language accessible to a large audience. The winner of 2016 was Ronny Boogaart with his book' A sprinter is a stopping train without toilet'.

Since 2016, on behalf of CLARIAH and the UTwente, I have been a member of the Legal Affairs working group of the National Coordination Centre for Research Data Management.

Within this working group, we are concerned with those legal aspects and statements that go beyond the RDM institution, such as

- How do we ensure that legal expertise is developed and shared in good cooperation between the institutions? This will enable the institution itself to give good advice on the legal aspects of research data management. The aim is to do this in such a way that legal risks are minimal and do not constitute an obstacle to research, data sharing or the valorisation of this research data.
- What does a good legal framework look like, based on experiences from use cases?
- How do we guarantee privacy and data within the RDM cycle?
- How can we reach agreements on participation in public-private partnerships?

In 2017, I was responsible for the DHBenelux conference in Utrecht. DHBenelux is a relatively small Digital Humanities conference with a clear focus on research and community building within the DH researchers in the Benelux. By the end of 2017, 190 different researchers came to the workshops and the conference.

Since 2016 I have been with Ernst Kruize (Gem). Utrecht), Lotte Willems (HU) and Daan Gönning (Watermelon) in the KSF Working Group Innovation & Technology. The purpose of the working group is to outline possible future scenarios for Customer Contact Centres for the next 5 to 10 years in the areas of AI and Language and Speech Technology, Social Media and Social and Legal developments. What is going to happen, how can this possibly change the sector, what needs to be taken into account, etc.? The report will be presented at the annual congress on 16 Nov 2017.

During the DH2016 in Krakow, together with Franciska de Jong and Joris van Eijnatten, I managed to get the prestigious DH2019 to Utrecht. From 2017 to 2019, a great deal of work will be done, together with the organisation agency CAOS, to make DH2019 a great success.