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RESEARCH INTERESTS	Multimodal representation learning, transformer architectures, speech and language foundation models. Cross-modal learning, automatic speech recognition, voice and acoustic signal analysis, spoken dialogue systems.
EDUCATION	◇ Imperial College, London, UK - Ph.D. in Signal Processing, March 2007 - Thesis title: Voice Source Cepstrum Processing for Speaker Identification - Advisor: Mike Brookes ◇ University of Iceland, Reykjavik, Iceland - M.Sc. in Signal Processing, June 2000 - Thesis title: Nonlinear System Identification of Speech with Recurrent Neural Networks - Advisor: Jon Atli Benediktsson - B.Sc. in Electrical Engineering, June 1999
WORK EXPERIENCE	◇ Professor Dep. of Engineering, Reykjavik University (2023 - Present) Teaching duties include: Data Mining and Machine Learning, Signals and Systems ◇ Adjunct Professor University of the Faroe Islands (2024 - Present) Supervision of graduate students in machine learning and spoken language processing ◇ Assistant and Associate Professor Reykjavik University (2009 - 2023) ◇ Director of CADIA Research Center of Reykjavik University (2016 - 2019) AI research center focusing on autonomous agents and intelligent systems ◇ Chairman of the board Tiro - language technology (2016 - Present) Speech recognition for Icelandic ◇ Founder and Board member Almennaromur (2013 - 2017) Association for Icelandic Language Technology
RESEARCH PROJECTS - EXAMPLES	◇ Multimodal Framework for Icelandic Speech and Sign Language (2025 - present) ◇ Computer aided pronunciation training in Icelandic (2021 - present) ◇ Language Technology Programme for Icelandic - ASR and TTS (2018 - present) ◇ Model-based speech analysis and voice quality assessment (2015-2017) ◇ Automatic Speech Recognition for Althingi (2014-2018) ◇ Automatic Speech Recognition for Icelandic Radiologists (2013-2019)
AWARDS	◇ Icelandic Language Board (October 2012) ◇ Royal Academy of Engineering - Global Research Award (October 2008)
GRADUATES	◇ Supervised 4+ PhD and 12+ MSc students

- JOURNAL PUBLICATIONS
- ◇ Wang, Peizheng, et al. **"Deep representation learning with cross attention-based multi-feature fusion for sleep apnea detection using sleep respiratory sound."** Biomedical Signal Processing and Control 113 (2026): 109093.
 - ◇ Gísladóttir, R.S., Helgason, A., Halldórsson, B.V., Helgason, H., Borsky, M., Chien, Y.R., Guðnason, J., Guðjonsson, S.A., Moisić, S., Dediu, D. and Thorleifsson, G., 2023. "Sequence variants affecting voice pitch in humans." *Science Advances*, 9(23), p.2969.
 - ◇ E.H. Magnúsdóttir, K.R. Jóhannsdóttir, A. Majumdar, J. Guðnason. "Assessing Cognitive Workload using Cardiovascular Measures and Voice." *Sensors* Vol 22(18), pp 6894, September 2022.
 - ◇ Y.R. Chien, J. Guðnason. "Acoustic Measure of Vocal Strain Based on Glottal Airflow Periodicity." *IEEE/ACM Transactions on Audio, Speech, and Language Processing* 29 563-574. 2020
 - ◇ K.R. Jóhannsdóttir, E.H. Magnúsdóttir, S. Sigurjónsdóttir, J. Guðnason "The role of working memory capacity in cardiovascular monitoring of cognitive workload.", *Biological psychology* 132, 154. 2018
 - ◇ M. Borsky, D.D. Mehta, J.H. Van Stan, J. Guðnason, "Modal and nonmodal voice quality classification using acoustic and electroglottographic features.", *IEEE/ACM Transactions on Audio, Speech, and Language Processing Special Issue on Biosignal-based Spoken Communication* 55, pp 2281-2291. 2017
 - ◇ Y.R. Chien, D. Mehta, J. Guðnason, M. Zanartu and T.F. Quatieri "Evaluation of Glottal Inverse Filtering Algorithms Using a Physiologically Based Articulatory Speech Synthesizer", *IEEE/ACM Trans on Audio, Speech & Language Processing*, Vol PP(99), 2017.
 - ◇ E.H. Magnúsdóttir, M. Borsky, M. Meier, K. Jóhannsdóttir, J. Guðnason "Monitoring Cognitive Workload Using Vocal Tract and Voice Source Features", *Periodica Polytechnica Electrical Engineering and Computer Science*, 2017.
 - ◇ Drugman, T., Thomas, M.R.P., Guðnason, J., Naylor, P.A. and Dutoit, T. "Detection of Glottal Closure Instants from Speech Signals: a Quantitative Review", *IEEE Trans on Audio, Speech & Language Processing*, Vol 20(3), pp 994 - 1006, March 2012.
 - ◇ Guðnason, J., Thomas, M. R. P., Ellis, D. P. W., and Naylor, P. A., "Data-driven Voice Source Analysis and Synthesis", *Speech Communication*, Vol 54(2), pp 199 - 211, February 2012.
 - ◇ Thomas, M. R. P., Guðnason, J., and Naylor, P. A., "Estimation of Glottal Closing and Opening Instants in Voiced Speech using the YAGA Algorithm", *IEEE Trans on Audio, Speech & Language Processing*, Vol 20(1), pp 82 - 91, January 2012.
 - ◇ Guðnason, J., Cui, J. and Brookes, M. , "HRR Automatic Target Recognition from Super-Resolution Scattering Center Features", *IEEE Trans on Aerospace and Electronic Systems*, Vol 45(4) pp 1512–1524, November 2009.
 - ◇ Naylor, P.A., Kounoudes, A., Guðnason, J. and Brookes, M., "Estimation of Glottal Closure Instants in Voiced Speech using the DYPSSA Algorithm", *IEEE Trans on Audio, Speech & Language Processing*, Vol 15(1), pp 34-43, January 2007.
 - ◇ Brookes, M., Naylor, P.A. and Guðnason, J., "A Quantitative Assessment of Group Delay Methods for Identifying Glottal Closures in Voiced Speech", *IEEE Trans on Audio, Speech & Language Processing*, Vol 14(2), pp 456-466, March 2006.
- BOOK CHAPTER
- ◇ Guðnason, J., "Speech Production Modeling and Analysis". In: *Rama Chellappa and Sergios Theodoridis, editors, Academic Press Library in Signal Processing*. Vol 4, Image, Video Processing and Analysis, Hardware, Audio, Acoustic and Speech Processing, Chennai: Academic Press, 2014, pp. 985-1018.
- REPORT
- ◇ A.B. Nikulásdóttir, J. Guðnason, S. Steingrímsson. "Máltækni fyrir íslensku 2018-2022: verkáætlun." *Mennta-og menningarmálaráðuneytið* (National Programme for Language Technology for Icelandic).

CONFERENCE
PUBLICATIONS

- ◇ í Lág, Dávid, Barbara Scalvini, and Jón Guðnason. **"Mapping Faroese in the Multilingual Representation Space: Insights for ASR Model Optimization."** Proceedings of the Joint 25th Nordic Conference on Computational Linguistics and 11th Baltic Conference on Human Language Technologies (NoDaLiDa/Baltic-HLT 2025). 2025.
- ◇ Sanguedolce, Giulia, et al. "Speech-Based Neurological Assessment Using Voice Source Feature Analysis in Stroke Survivors." 2025 25th International Conference on Digital Signal Processing (DSP). IEEE, 2025.
- ◇ Richter, Caitlin Laura, et al. "Assessed and Annotated Vowel Lengths in Spoken Icelandic Sentences for L1 and L2 Speakers: A Resource for Pronunciation Training." Proceedings of the Joint 25th Nordic Conference on Computational Linguistics and 11th Baltic Conference on Human Language Technologies (NoDaLiDa/Baltic-HLT 2025). 2025.
- ◇ Sanguedolce, Giulia, et al. "Physiologically-Informed Feature Analysis of Acquired Speech Disorders for Stroke Assessment." Proc. Interspeech 2025. 2025.
- ◇ Bédi, Branislav, et al. "Designing pedagogically cured interface of the CAPTinI system for practising pronunciation in L2 Icelandic." (2024).
- ◇ Carlos Daniel Hernandez Mena, Þorsteinn Daði Gunnarsson, and Jon Gudnason. 2024. SamróMur Milljón: An ASR Corpus of One Million Verified Read Prompts in Icelandic. In *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024)*, pages 14305–14312, Torino, Italia. ELRA and ICCL.
- ◇ Jón Guðnason, Guolin Fang, and Mike Brookes. "Epoch-Based Spectrum Estimation for Speech.", *Interspeech*. Dublin. 2023.
- ◇ Shijun Wang, Jón Guðnason, and Damian Borth. **"Learning Emotional Representations from Imbalanced Speech Data for Speech Emotion Recognition and Emotional Text-to-Speech."**, *Interspeech*. Dublin. 2023.
- ◇ Caitlin Richter, Ragnar Palsson, Luke O'Brien, Kolbrun Friðriksdóttir, Branislav Bédi, Eydís Magnúsdóttir, and Jon Gudnason, "Orthography-based pronunciation scoring for better CAPT feedback." *Interspeech*. Dublin. 2023.
- ◇ Caitlin Richter and Jón Guðnason. Relative Dynamic Time Warping Comparison for Pronunciation Errors", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2023.
- ◇ Shijun Wang, Jón Guðnason, and Damian Borth **"Fine-grained Emotional Control of Text-To-Speech: Learning To Rank Inter-And Intra-Class Emotion Intensities."**, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2023.
- ◇ Mena, Carlos Hernández, Annika Simonsen, and Jón Guðnason. "ASR Language Resources for Faroese." Proceedings of the 24th Nordic Conference on Computational Linguistics (NoDaLiDa). 2023.
- ◇ Lamhauge, S. S., Debess, I. N., Mena, C. D. H., Simonsen, A., and Gudnason, J. "Standardising Pronunciation for a Grapheme-to-Phoneme Converter for Faroese". In The 24rd Nordic Conference on Computational Linguistics. 2023
- ◇ Lindh-Knuutila, Tiina, et al. "Microservices at Your Service: Bridging the Gap between NLP Research and Industry." Proceedings of the 24th Nordic Conference on Computational Linguistics (NoDaLiDa). 2023.
- ◇ Caitlin Richter, Branislav Bedi, Ragnar Palsson, and Jon Gudnason "Computer-assisted pronunciation training in Icelandic (CAPTinI): developing a method for quantifying mispronunciation in L2 speech" *Intelligent CALL, granular systems and leaner data*. 2023.
- ◇ Shijun Wang, Hamed Hemati, Jón Guðnason, and Damian Borth "Generative Data Augmentation Guided by Triplet Loss for Speech Emotion Recognition." *Interspeech*. Incheon. 2022.
- ◇ Carlos Daniel Hernandez Mena, David Erik Mollberg, Michal Borský, Jón Guðnason. "Samrómur Children: An Icelandic Speech Corpus". In LREC 2022 Workshop Language Resources and Evaluation Conference 20-25 June 2022

- ◇ Staffan Hedström, David Erik Mollberg, Ragnheiður Þórhallsdóttir, Jón Guðnason. “Samrómur: Crowd-sourcing large amounts of data”. InLREC 2022 Workshop Language Resources and Evaluation Conference 20-25 June 2022
- ◇ Fong, Judy, et al. “An Open Source Web Reader for Under-Resourced Languages.” *Proceedings of the 1st Annual Meeting of the ELRA/ISCA Special Interest Group on Under-Resourced Languages*. 2022.
- ◇ Tadić M, Farkaš D, Filko M, Vasiļevskis A, Vasiļjevs A, Ziediņš J, Motika Ž, Fishel M, Loftsson H, Guðnason J, Borg C. “National Language Technology Platform for Public Administration”. InLREC 2022 Workshop Language Resources and Evaluation Conference 20-25 June 2022 Jun 20
- ◇ Nikulásdóttir AB, Arnardóttir Þ, Guðnason J, Daði Þ, Gunnarsson AK, Jónsson HP, Loftsson H, Óladóttir H, Sigurðsson EF, Sigurgeirsson AÞ, Snæbjarnarson V. “Help Yourself from the Buffet: National Language Technology Infrastructure Initiative on CLARIN-IS”. InCLARIN Annual Conference 2022 (p. 124).
- ◇ Sigurgeirsson, Atli, et al. “Talrómur: A large Icelandic TTS corpus.” *Proceedings of the 23rd Nordic Conference on Computational Linguistics (NoDaLiDa)*. 2021.
- ◇ Helga Svala Sigurðardóttir, Anna Björk Nikulásdóttir, Jón Guðnason “Creating Data in Icelandic for Text Normalization” *Proceedings of the 23rd Nordic Conference on Computational Linguistics (NoDaLiDa)*. 2021.
- ◇ Mollberg, David Erik, et al. “Samrómur: Crowd-sourcing data collection for icelandic speech recognition.” *Proceedings of The 12th Language Resources and Evaluation Conference*. 2020.
- ◇ Sigurgeirsson, Atli, Gunnar Örnólfsson, and Jón Guðnason. “Manual speech synthesis data acquisition-from script design to recording speech.” *Proceedings of the 1st Joint Workshop on Spoken Language Technologies for Under-resourced languages (SLTU) and Collaboration and Computing for Under-Resourced Languages (CCURL)*. 2020
- ◇ I.R. Helgadóttir, J. Fong, A.B. Nikulasdóttir, R. Kjaran, J. Gudnason. “The Althingi ASR System.” *Interspeech*, Graz. 2019.
- ◇ A.V. Runarsdóttir, I.R. Helgadóttir, J. Gudnason. “Lattice Re-Scoring During Manual Editing for Automatic Error Correction of ASR Transcripts.” *Interspeech*, Graz. 2019.
- ◇ Y.R. Chien, M. Borsky, J. Gudnason. “F0 Variability Measures Based on Glottal Closure Instants.” *Interspeech*, Graz. 2019.
- ◇ A.B. Nikulasdóttir, J. Gudnason. “Bootstrapping a Text Normalization System for an Inflected Language. Numbers as a Test Case.” *Interspeech*, Graz. 2019.
- ◇ A.B. Nikulásdóttir, I.R. Helgadóttir, M. Pétursson and J. Gudnason. “Open ASR for Icelandic: Resources and a Baseline System.” *Language Resources and Evaluation Conference (LREC)*, Miyazaki, May 2018
- ◇ S. Steingrímsson, S. Helgadóttir, E. Rögnvaldsson, S. Barkarson, J. Gudnason. “Risamálheild: A Very Large Icelandic Text Corpus.” *Language Resources and Evaluation Conference (LREC)*, Miyazaki, May 2018
- ◇ S. Steingrímsson, J. Guðnason, S. Helgadóttir, E. Rögnvaldsson. “Málrómur: A Manually Verified Corpus of Recorded Icelandic Speech.” *Proceedings of the 21st Nordic Conference on Computational Linguistics, NoDaLiDa*, 131. pp 237–240. Gothenburg, May 2017.
- ◇ J. Gudnason, M. Petursson, R. Kjaran, Simon Klupfel, A.B. Nikulasdóttir. “Building ASR corpora using Eyra.” *Interspeech*, Stockholm. 2017.
- ◇ I.R. Helgadóttir, R. Kjaran, A. B. Nikulasdóttir, J. Gudnason “Building an ASR corpus using Althingi’s Parliamentary Speeches.” *Interspeech*, Stockholm. 2017.
- ◇ Y.R. Chien, M. Borsky, J. Gudnason “Objective Severity Assessment From Disordered Voice Using Estimated Glottal Airflow.” *Interspeech*, Stockholm. 2017.

- ◇ M. Borsky, M. Cocude, D. D. Mehta, M. Zanartu, J. Gudnason. "Classification of voice modes using neck-surface accelerometer data," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, New Orleans 2017.
- ◇ Manuela Meier, Michal Borsky, Eydis H. Magnúsdóttir, Kamilla R. Johannsdóttir and Jon Guðnason. "Vocal tract and voice source features for monitoring cognitive workload," *IEEE CogInfoCom*, 2016.
- ◇ Michal Borsky, Daryush D Mehta, Julius P Gudjohnsen, Jon Guðnason, et al. "Classification of Voice Modality Using Electroglottogram Waveforms." *Interspeech*, San Francisco. pp-3166-3170. 2016.
- ◇ Petursson, Matthias, Simon Klupfel, and Jon Guðnason. "Eyra-Speech Data Acquisition System for Many Languages," *Procedia Computer Science*, 81: pp-53-60. 2016.
- ◇ van der Werff, L., Gudnason, J., Johannsdóttir, K. R., "Detection of Cardiovascular Reactivity in Speech," *Interspeech*, Dresden 2015.
- ◇ Gudnason, J., Mehta, D.D., Quatieri, T.F., "Evaluation of Speech Inverse Filtering Techniques using a Physiologically-Based Synthesizer," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, Brisbane 2015.
- ◇ Gudnason, J., Mehta, D.D., Quatieri, T.F., "Closed Phase Estimation for Inverse Filtering the Oral Airflow Waveform," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, Florence 2014.
- ◇ Gudnason, J., Kjartansson, O., Johannsson, J., Carstensdóttir, E., Vilhjálmsson, H., Loftsson, H., Helgadóttir, S., Johannsdóttir, K. and Rognvaldsson, E. "Almannarómur: an open Icelandic speech corpus," *Spoken Language Technologies for Under-resourced Languages.*, Cape Town 2012.
- ◇ Thomas, M. R. P., Gudnason, J., Naylor, P. A., Geiser, B. and Vary, P., "Voice Source Waveform Analysis and Synthesis using Principal Component Analysis and Gaussian Mixture Modelling," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, Dallas 2010.
- ◇ Gudnason, J., Thomas, M. R. P., Naylor, P. A. and Ellis, D. P. W., "Voice Source Waveform Analysis and Synthesis using Principal Component Analysis and Gaussian Mixture Modelling," *Interspeech*, (Brighton 2009).
- ◇ Thomas, M. R. P., Gudnason, J. and Naylor, P. A., "Detection of Glottal Closing and Opening Instants using an Improved DYPSA Framework," *Proc. European Signal Processing Conf. (EUSIPCO)*, (Glasgow 2009).
- ◇ Thomas, M. R. P., Gudnason, J. and Naylor, P. A., "Data-Driven Voice Source Waveform Modelling," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, Taipei, 2009.
- ◇ Thomas, M. R. P., Gudnason, J. and Naylor, P. A., "Application for the DYPSA Algorithm to Segmented Time Scale Modification of Speech," *Proc. European Signal Processing Conf. (EUSIPCO)*, Lausanne, 2008.
- ◇ Cui, J., Gudnason, J. and Brookes, M., "Hidden Markov Models for Multi-Perspective Radar Target Recognition," *Proc. IEEE Int. RADAR Conference*, Rome, 2008.
- ◇ Gudnason, J. and Brookes, M., "Voice Source Cepstrum Coefficients for Speaker Identification," *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, pp. 4821 - 4824, Las Vegas, 2008
- ◇ Gaubitch, N. D., Thomas, M. R. P., Gudnason, J. and Naylor, P. A., "A Practical Multichannel Dereverberation Algorithm using Multichannel DYPSA and Spatiotemporal Averaging," *Proc Workshop on App. of Signal Processing to Audio and Acoust. (WASPAA)*, New Platz, 2007.
- ◇ Maqsood, H., Gudnason, J. and Naylor, P. A., "Enhanced Robustness to Unvoiced Speech and Noise in the DYPSA Algorithm for Identification of Glottal Closure Instants," *Proc. European Signal Processing Conf. (EUSIPCO)*, Poznan, 2007.

- ◇ Cui, J., Guðnason, J. and Brookes, M., “Maximum A-Posteriori Adaptive Masking for Clutter Suppression in Automatic Radar Target Recognition,” *Proc. IEEE RADAR Conference*, Verona, 2006.
- ◇ Cui, J., Guðnason, J. and Brookes, M., “Radar shadow and superresolution features for automatic recognition of MSTAR targets,” *Proc. IEEE Int. RADAR Conference*, pp.534 - 539, Arlington, 2005
- ◇ Cui, J., Guðnason, J. and Brookes, M., “Automatic recognition of MSTAR targets using radar shadow and superresolution features,” *Proc. International Conf. Acoustics, Speech and Signal Processing. (ICASSP)*, pp.V-589 - V-592, Philadelphia, 2005