

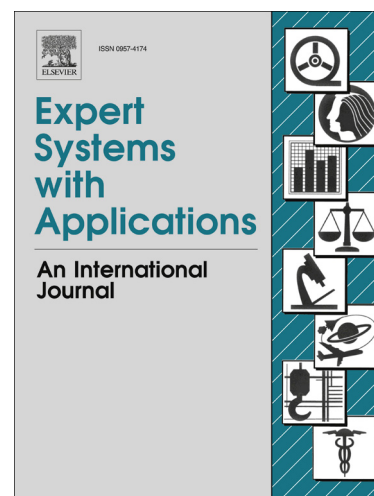
## Accepted Manuscript

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PII: S0957-4174(15)00460-1  
DOI: <http://dx.doi.org/10.1016/j.eswa.2015.07.001>  
Reference: ESWA 10135

To appear in: *Expert Systems with Applications*



Please cite this article as: Vaiciukynas, E., Verikas, A., Gelzinis, A., Bacauskiene, M., Minelga, J., Hållander, M., Padervinskis, E., Uloza, V., Fusing voice and query data for non-invasive detection of laryngeal disorders, *Expert Systems with Applications* (2015), doi: <http://dx.doi.org/10.1016/j.eswa.2015.07.001>

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# Fusing voice and query data for non-invasive detection of laryngeal disorders

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## Abstract

Topic of this study is exploration and fusion of non-invasive measurements for an accurate detection of pathological larynx. Measurements for human subject encompass answers to items of a specific survey and information extracted by the openSMILE toolkit from several audio recordings of sustained phonation (vowel /a/). Clinical diagnosis, assigned by medical specialist, is a target attribute distinguishing subject as healthy or pathological. Random forest (RF) is used here as a base-learner and also as a meta-learner for decision-level fusion. 5 RF classifiers, built separately on 3 variants of audio recording data (raw and after two types of voice activity detection) and 2 variants of questionnaire (with 9 and 26 questions) data, are fused selectively by finding out the best combination of all possible. Before fusion, due to presence of missing values in query modalities, several imputation techniques were evaluated besides the complete-case analysis by listwise deletion. Out-of-bag equal error rate (EER) was found to be higher for audio

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