Bioinformatics Methods for Breath Analysis and Biomarker Detection

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Abstract:

The volatile is the sum of volatile organic compounds that are emitted by all living cells and tissues. We seek to non-invasively “sniff” biomarker molecules that are predictive for the biomedical fate of individual patients. This promises great hope to move the therapeutic windows to earlier stages of disease progression. While portable devices for breathomics measurement exist, we face the traditional biomarker research barrier: a lack of robustness, which hinders translation to the world outside laboratories. To move from biomarker discovery to validation, from separability to predictability, we have developed several bioinformatics methods for computational breath analysis, which have the potential to significantly boost non-invasive biomedical decision making by rapid and cheap matching of decisive patterns in exhaled air. We aim to provide a supplementary diagnostic tool complementing classic urine, blood and tissue samples. The presentation will review the state of the art, highlight existing challenges and introduce new data mining methods for identifying breathomics biomarkers.

Relevant Publications:


