

Consultation d'une offre de thèse

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| Projet | |
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| Titre | Analyse conversationnelle automatisée de l'entrevue clinique en consultation |
| Résumé | <p>Neuropsychiatric psychiatric disorders affect the way we are communicating, thus allowing trained clinicians to detect relevant signs during a first clinical interview or so-called anamnesis. This history taking is an indispensable part of each first consultation allowing to obtain information useful in formulating a diagnosis. Moreover, during this phase, clinicians learn a lot about patients' social and interaction skills, mood and motivation levels.</p> <p>However, a comprehensive clinical interview requires sufficient consultation time as well as strong clinical competencies and expertise to be able to detect subtle signs of changes. It might be beneficial to record clinical interviews, which is increasingly done, in order to analyze and extract diagnosis relevant information afterwards. This implies as well though a substantial work load and thus offers opportunities for technology support in the field of automatic speech, language and conversational analysis. Computer-assisted medical history taking systems have been already available for many years but they are mainly based on self-interviews with relatively low acceptance rate due to the discomfort of communicating with a machine as opposed to a human.</p> <p>The aim of this PhD project is therefore to explore the use of a support tool for clinicians during clinical interviews based on the most recent advances in computer linguistic. This would allow to receive in real time (or immediately after the interview) additional input, such as significant repetitions of certain key words and concepts or a slowing down of speech rate during a sensitive issue, from a patient's discourse analysis. Observations a trained clinician will notice but without objective measurements to quantify it remains difficult to validate and highly sensitive to the assessors' bias.</p> <p>Over the past years, the research lab explored the use of automatic voice analysis for improved cognitive testing with encouraging results (König, 2015, 2017, 2018). Furthermore, it was shown that this technology can help with the detection of apathy and depression in elderly (Linz, 2018; Darmon; 2018, König 2019). The work of this thesis will be based on these previous studies demonstrating the interest of using such technology in clinical practice as assessment support.</p> <p>For this, Define clinical requirements for the use of natural language processing in clinical practice and namely the clinical interview (what is relevant to be automatically detected in discourse? where does the clinician need support?) Develop/adapt in collaboration with a technical team the support tool (based on already existing assets); Interface,</p> |

Data Visualization, etc.
Collect and annotate data sets of recordings of structured clinical interviews (or parts of it)
Analyze and compare data sets – manual annotations with automatically extracted information
Based on data collected, define the most relevant features, concepts, key words, layouts for a practical and well-adopted use of the tool during clinical interviews
Write scientific report (articles) of the obtained results and help with the implementation of the tool

Mots-clés

Bioinformatique
Neurobiologie
Modélisation

Publications en rapport

Konig A, Linz N, Troger J, Wolters M, Alexandersson J, Robert P. Fully Automatic Speech-Based Analysis of the Semantic Verbal Fluency Task. *Dementia and geriatric cognitive disorders*. 2018;45(3-4):198-209.

Konig A, Satt A, Sorin A, Hoory R, David A, Robert PH. Use of Speech Analyses within a mobile application for the Assessment of cognitive impairment in elderly people. *Current Alzheimer research*. 2017.

Konig A, Satt A, Sorin A, et al. Automatic speech analysis for the assessment of patients with predementia and Alzheimer's disease. *Alzheimer's & Dementia*. 2015;1:112-124.

Profil souhaité pour le candidat

Étudiant(e) dans une discipline en relation avec la santé (médecine, psychologie, orthophonie, activité physique) ayant un intérêt pour les troubles neuro psychiatrique, l'utilisation des nouvelles technologie et les jeux. Utilisation de la langue anglaise nécessaire (oral et écrit)

Financement

Réponses appel d'offre pour bourse de thèse et programme de recherche (en cours)

Informations supplémentaires

Septembre 2019 – Aout 2022
Septembre 2019- Décembre 2019 :
Revue de la littérature
Développement initiale des applications ludiques et protocoles de recherche
Dépôt des protocoles de recherche aux comités d'éthique

Janvier 2020- Avril 2021 :
Tests de faisabilité
Amélioration des applications et protocoles
Étude clinique pour évaluer l'efficacité des interventions proposées chez des sujets présentant un trouble cognitif
Présentations des résultats à 2 congrès
Rédaction de 1 article scientifique (journal international indexé)

Mai 2021 – Avril 2022 :
Analyse finale des résultats
Rédaction et publication de minimum 2 articles scientifiques (journaux internationaux indexés)

Mai 2021 – Septembre 2022 : Rédaction du Mémoire de thèse