**Human interaction with voice-assistant agents**

Introduction:

Problem Definition:

* Current observation techniques require sit-in observers or people to listen to hours of conversation to pick out areas of interest

Aims and Objectives:

* The overall goal of my project is to help families and therapists better understand a subject’s home dynamic. I aim to help in this area by supplying more useful and important information for analysis as there should be a more natural feel to the conversations occurring in the home

Motivations:

* One of the biggest problems with current techniques and in-lab experiments is that there is a natural tendency for participants to change their actions knowing they are being observed

Background:

* Specifically looking at young people, mental health problems affect about 1 in 10 children but 70% of children and young people experiencing these problems don’t have appropriate intervention (Mental Health Foundation, 2019)

Difficulties:

* Many of the techniques identified in DPICS may require more than a decibel level detector to automatically encode e.g. smart talk. Furthermore, some techniques may require more than just audio detection to be sure to encode these correctly e.g. physical negative/positive

Main Body:

Achievements:

* Device can successfully record all conflicts that contain shouting or sharp increase in decibel level (slamming doors)
* Device records conflicts as they are likely to include parental techniques outlined in DPICS
* Exported to Raspberry Pi after trying to place onto mobile sensing frameworks
* Dropbox has built in tools for attaching comments to specific points in audio clips

Results:

* Due to nature of project and trying to record people’s voice, setting up testing and getting approval for it would have been a long process.

Contributions:

* During my research I found no record of any studies that have made comparisons between DPICS and SSP or any emerging technologies.
* Created a device that is focused on detecting family conflicts which, if unresolved, have been shown to affect a child’s mental wellbeing. On top of this, as a conflict is interaction in which emotions are heightened, it is likely there will be opportunity to capture some techniques outlined in DPICS

Conclusions:

* I have created a device that can help in understanding and capture a participant’s home environment more effectively so that therapists can obtain conversations that contain techniques that may be harmful to a child’s mental wellbeing

References

NHS. (2007). *Adult Psychiatric Morbidity in England - 2007, Results of a household survey*. Retrieved from NHS Digital: https://digital.nhs.uk/data-and-information/publications/statistical/adult-psychiatric-morbidity-survey/adult-psychiatric-morbidity-in-england-2007-results-of-a-household-survey

Raspberry Pi Logo sourced from:

https://www.redbubble.com/people/james9834/works/33554715-raspberry-pi-logo?p=art-print

Dropbox Logo sourced from:

https://www.dropbox.com/branding

Mental Health Foundation. (2019). *Children and Young People*. Retrieved from Mental Health Foundation: https://www.mentalhealth.org.uk/a-to-z/c/children-and-young-people

Glossary

DPICS – Dyadic Parent-Child Interaction Coding Scheme

SSP – Social Signal Processing

Objectives

1. Information gathered must be useful for those analysing the conversations.
2. Must correctly identify when a specific type of conversation is occurring.
3. Anchor points be unique enough, so that those dissecting information are not overloaded with data.
4. Device must be in range of ‘good’ quality conversations.
5. Be placed in the home and be accepted as ‘part of the furniture’ and not be too intrusive on the home dynamic, so the conversations recorded reflect the real atmosphere in the house.
6. Must consider data protections laws.