Identification of 3D Attention Points in Virtual Reality Scenes Final Presentation for Executives

By
Sandeep Tandra
Vineel Gannu

April 06, 2020

University
of Regina

Presentation Outline

1. Situation and Project Goals
2. Big Picture
3. Executive Summary
4. Approach
5. Model Description
6. As-is and To-be Processes
7. Recommendations

Situation and Project Goals

a. Situation
- Anxiety disorder is characterized by feelings of intense and persistent anxiety, fear, and nervousness.
- In-Vivo exposure is costly and it is also difficult for few patients to imagine specific stimuli when they undergo imaginal exposures.

b. Goals
- Create a virtual reality environment with different stimuli and scenes and identify the attention points using the trained model.
- In-Vivo exposure and imaginal exposure can be implemented at a reasonable cost.
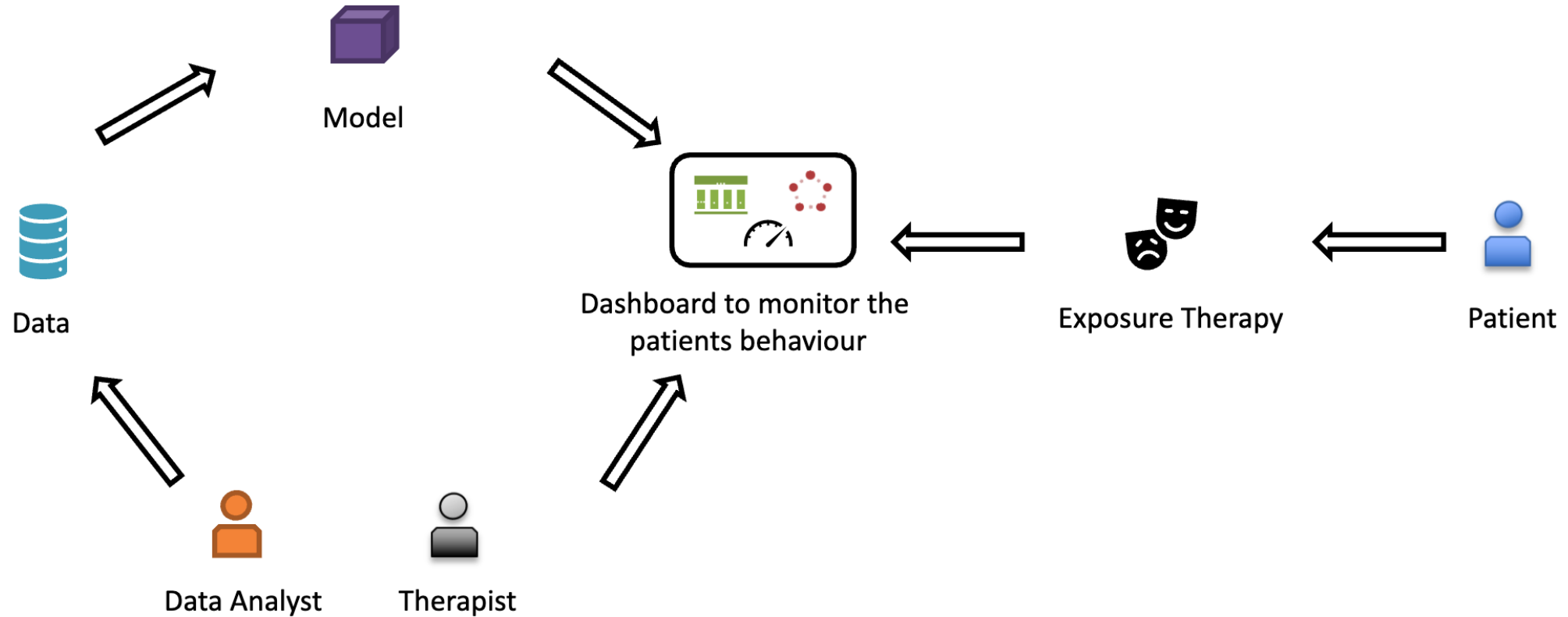
University of Regina

Big Picture

Fig 1. Big Picture

Executive Summary

- Therapists have identified the growth areas resulting from the usage of this model.
  - Imaginal exposures showed a better performance by using this model when compared to the traditional method.
  - The implementation cost was reduced drastically when the In-vivo exposure used this model.

University of Regina

Approach

- Created the dataset by using a virtual reality environment. The VR environment was built in such a way that it can be used in different anxiety-reduction techniques.
- Developed the predictive model to identify the attention points, that can be used to identify the attention points of the patients when they are exposed to anxiety-reduction techniques.
- Different methods were used to determine and improve the model performance.

UNIVERSITY of Regina

Model Description

- Overview of Methodology
  - Predict the 3D Attention points in a virtual environment which has two different images that depicts different emotions.
- Model : Multilayer perceptron
- Sampling
  - Training Sample   : 56% of data
  - Validation Sample : 24% of data
  - Testing Sample   : 20% of data
- The model developed has reasonable predictive capability for the given dataset.

University
of Regina

As-is and To-be Processes

a. As-is

- Healthcare organizations like Big Health and Medigold Health provides digital therapy for the patients.
- The current services provided by these organizations does not include VR based therapy.

b. To-be

- VR based behavioral therapy with the digital therapy can be leveraged.
- Companies like Psious that uses VR therapy has a higher revenue when compared to companies that follow conventional therapy methods.
- Leveraging VR based behavioral therapy boosts the organization's revenue allowing us to make a good deal with the organizations that does not include VR therapy.

University of Regina

Recommendations

- Implement the model on the anxiety-reduction methods such as exposure therapy (a technique in behavior therapy) for better performance.
- Implement the model on the self-driving cars which can monitor the attention of the driver.
- This model can also be implemented in VR based educational applications where the teacher can monitor the students remotely.

University of Regina

Thank you so much !!

University
of Regina