

Therabot™: A Robot Therapy Support System in Action

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ABSTRACT

Therabot™ is an assistive-robotic therapy system designed to provide support during counseling sessions and home therapy practice to patients diagnosed with conditions associated with trauma. It has the form factor of a floppy-eared dog with coloring similar to that of a beagle, and comfortably fits in a person's lap.

Categories and Subject Descriptors

I.2.9 [Artificial Intelligence]: Robotics; J.4 [Computer Applications]: Social and Behavioral Sciences—*Psychology*

1. INTRODUCTION

An issue of growing concern in the United States is the prevalence of sexual victimization and violence [1]. The focus of this research effort was the physical design of the Therabot™ assistive-robot therapy system to provide support to victims of trauma during counseling and home therapy practice. Therapists have found it helpful to provide victims of trauma with stuffed animals not only as a means of comfort, but also as a tool to ground the victims by giving them an object they can hold, touch, and cuddle [2].



Figure 1: Conceptual rendering

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HRI'15 Extended Abstracts, March 2–5, 2015, Portland, Oregon, USA.

ACM 978-1-4503-2883-8/15/03.

<http://dx.doi.org/10.1145/2701973.2702695>.

2. ROBOT DESIGN

Based on responses from three surveys, the robot was designed to be about the size of a small pillow so as to fit comfortably in a person's lap. Additionally, the robot is designed with a padded, furry covering that resembles the fur of a stuffed animal. Some of the participants expressed interest in a therapy robot that would be reactive to touch like a real therapy animal. Not only does the robot have touch sensors in its paws, head, and ears, it also has an array of sensors along its chest and back. The robot's torso also contains a thermometer and barometer to determine if the robot is being squeezed or held closely.

Above all else, Therabot™ was designed to be responsive to user interaction. The robot's legs have compliant joints and the robot has an onboard IMU that allows it to detect when it is moved. The robot has an electret microphone in each of its ears to perform sound localization, as well as a high-quality microphone that can be used to record audio, allowing therapists to record sessions through a custom interface.

3. DEMO

This demonstration shows the appearance and functionality of the Therabot™ robot using pre-programmed routines and artificial intelligence. We will display the life-like motion of the legs, ears, tail, and head of the robot. Individually actuated to move up and down, the legs will move similarly to a dog shaking its paws. The ears will help display emotion by raising and lowering at their base. To help show excitement, the tail will have the ability to wag back and forth. Three degrees of freedom lie in the head allowing Therabot™ to look up and down, left and right, and tilt its head from side to side. All actuation will be in response to external stimuli to provide a therapeutic effect and create the appearance of a living dog.

4. ACKNOWLEDGMENTS

This research was sponsored by the National Science Foundation Under Grant IIS-1249488.

5. REFERENCES

- [1] CDC. Understanding sexual violence fact sheet, 2012.
- [2] J. Donatelli. Stuffed animals help pacify sexual assault victims. Gazette.net, January 12 2006.