



# Graduation Project Proposal

## Autism robot

### Team (4-5):

Member name	Student's ID	Department	e-mail
1. Amira Barakat Ali Abdel Wahab	20191703002	Artificial Intelligence	amira.barakat16@stemmaadi.edu.eg
2. Antony Nabil Naguib Youhanna	20191703004	Artificial Intelligence	antony20191703004@cis.asu.edu.eg
3. Alzahraa Mofed Mohammed Mofed	20191703001	Artificial Intelligence	alzahraamofed315@gmail.com
4. Nagwa Mohammed Anwar Ahmed	20191703037	Artificial Intelligence	nagwa20191703037@cis.asu.edu.eg
5. Aya Khaled Mohammed Salah Elsayed	20191703005	Artificial Intelligence	aya20191703005@cis.asu.edu.eg

### Supervision team approval

Name	Department	e-mail
Abeer Mahmoud	Computer science	abeer.mahmoud@cis.asu.edu.eg
Andrew Magdy	Scientific computing	Andrew.Magdy@cis.asu.edu.eg



## Introduction

Autism spectrum disorders are a group of lifelong disabilities that affect people's ability to communicate and to understand social cues. Research into applying robots as therapy tools has shown that robots seem to improve engagement and elicit novel social behaviors from people (particularly children and teenagers) with autism. Robot therapy for autism has been explored as one of the first application domains in the field of socially assistive robotics (SAR), which aims to develop robots that assist people with special needs through social interactions. We will try that in a smaller scale as an application.

## Motivation

Autism spectrum disorder is not a curable disease, it is a thing you live with; however, the severity of this condition can be managed through working with a qualified therapist, therapists are not accessible to all people because of their high expenses, in attempt to solve this problem, we thought about making a robot (mainly an application) to provide constant, easily accessible to those on this spectrum

## Objective

What you aim to achieve with this project (points).

1. Face recognition: to recognize the child and its face
2. Facial Expression Recognition: to know if the child is happy or not and deal with it by other features.
3. Object recognition: to make the child learn the objects around him
4. Speech to text: With this feature we will remove the need of keyboard and will be using voice of the kid to enter the name and status.
5. Body spinning Ball: In order to make the child more interactive we need to make him do some exercise, and we aim to achieve this by using the Spin Ball game.
6. Directions Game: to make the child more aware with the environment.
7. Alphabet Teaching Program: to teach the child the A B Cs ....
8. Numbers Teaching program: to teach the child numbers 1 2 3
9. Colors Teaching program: to teach the child the colors and make him aware with all things.
10. Prayer teaching program: to teach the child religion in a simple way.



11. Human emotions teaching program: to teach him the emotions and how to express his feelings.
  12. Full body estimation and Poses Detection: 3D Human pose estimation is a computer vision task which uses multiple/simple, monocular/stereo camera to estimate the body points in 3 dimensions. This have enormous application ranging from human fall detection, crime investigation, sports etc.
- All these features will teach the child in an attractive and simple way and make him more interactive with the community because Robots can deliver predictable responses over and over. They repeat things and behave in a consistent way, which are highly important to helping children with autism learn better.

## Work Plan

1. Gathering and collecting Dataset from doctors
2. Practicing/working on our software skills
3. Building the software which is the main project (it's mainly an application)
4. If we have enough time we will build a hardware system connected to the software but it will be something extra we may not have it (optional)

## References

- [1] [A Brief History of Computer Vision \(and Convolutional Neural Networks\).](#)  
[Rostyslav Demush, Hacker Noon, February 27, 2019](#)
- [2] <https://www.ibm.com/cloud/learn/deep-learning>
- [3] **Detailed Requirement for Robots in autism therapy, Nicole Giullian, Daniel Ricks.**