

PROJECT PRE-PROPOSAL

Group Member's:	Duygu Aralioğlu	1630581
	Bedia Acar	1630508
	Zülfü Ulaş Şahin	1560796
	Gülnur Neval Erdem	1630797

Group Name : D-BUG

CHOICE 1

Project Title: TURKISH SIGN LANGUAGE RECOGNITION USING MICROSOFT KINECT

Sponsor (if any) : INNOVA

Description of which problem you intend to solve: The communication problem between speech-impaired people and others.

Characteristics of the project :

- **What will be the coverage?**

The primary aim will be to enable people with speech disorder to interact with the machine by converting gestures of Turkish Sign Language (TSL) to text using Microsoft Kinect Technology.

- **What will be the limitations?**

The program is limited by the facilities supported by Kinect technology. The reactivity of the program depends on the Kinect's recognition ability. As Kinect can not recognize finger movements, the program will not cover abstract words of TSL.

- **What will your system do and what won't do? Specify as detailed as possible.**

We are intending to develop the program in distinct parts. First of all, we will choose a SDK to convert data coming from Kinect to an appropriate form of input. Both Microsoft Kinect SDK and openNI has their own pros and cons and our research are underway to find which one is better and more appropriate for our program. After we determine the SDK, we will analyse mathematical aspects of pre-determined movements with respect to this input coming from Kinect. This analyse strategy could be restricted (i.e. we can find them experimentally and integrate it to the system) or software could use a learning method (i.e. Neural Network) in order to create its own database of pre-determined movements. Then, a match system that compares Kinect inputs with these pre-defined movements will be developed and it will mostly rely on the mathematical form of pre-defined movements that we

chose before. After that, gesture recognising part will be finished.

Once we recognize the gestures, we will then create an interface for communication and education modules of the program, both using this recognition system. Communication part will be the converting the gesture to the text. The education model will give the text first and then expecting the corresponding gesture to be performed by the user, the program will try to recognize the gesture done by the user and telling whether it is performed correctly or not.

Program will only recognize Turkish sign-language gestures and convert them to text in Turkish. It will not cover any other language. In addition to this, since Kinect can not recognize finger movements, the program will not convert abstract words of TSL.

For the beginning the program will recognize only 10 gestures pre-defined. Yet, it will be possible to define more gestures once it is proved that the program works well enough.

- **Who will be using your product?**

Speech-impaired people at all ages and also people who want to learn and practice on TSL.

- **What will be the end product?**

The program will work on PC environment mainly. By connecting Kinect to PC, the user will be able to use our program to convert TSL to text and/or use it to learn TSL.

CHOICE 2

Project Title: MACHINE TRANSLATION OF CAPTURED IMAGES ON iOS5 FOR TURKISH

Sponsor (if any): Teknoloji Yazılımevi Ltd. Sti.

CHOICE 3

Project Title: A SELF LEARNING AGENT FOR A TURN-BASED GAME

Sponsor (if any): SNG Bilişim