**Deep learning project\_Team 6**

- Danger signals : SOS to the CCTV -





* Goal
  + The goal of this project is to enable computers to recognize human posture in real-time using a webcam to create and show alert messages in case of danger.
* Motivation
  + The adoption of domestic CCTV systems is increasing over time. The reasons may vary, but the most common reason may be keeping one’s family safe. People are still exposed to diverse types of danger even when they are at home. Usually, the most efficient way to call for help is to speak out. In some cases, however, speaking out is difficult or unavailable. For example, toddlers could slip and hit their head in the blink of an eye when they are out of the caregivers’ sight. Patients with intellectual disabilities or neurological or psychiatric diseases could put themselves into danger without noticing. In such cases, constant monitoring is required, which is difficult and burdensome to caregivers.
  + Our project aims to develop an application that safeguards people from domestic dangers. Pose estimation using webcam would be utilized to recognize people in certain situations and to show alert messages regarding such situations.
* Assumption and setting
  + For a variety of applications, we mainly consider two situations, first detecting signs made intentionally, second signs that are detected from real situations.
  + When someone senses intruders in home, we can make a hand signal to call 911 silently. On the other hand, when someone suddenly falls down, the situation will be automatically reported and send text messages to registered numbers.

* Proposed method
  + We will use Frank mocap as the main program for 3D pose estimation. We would like to create datasets of skeleton images and classify the output from Frank mocap through keras deep network model.

- 3D pose estimation : Frank mocap and EFT

- Dataset : skeleton pose estimation images, 200 per pose

(100 of correct one / 100 of incorrect one)

- Model : keras deep network model using softmax activation

function for classification

* Further work and expectation
  + After practicality is proven, visual data can be shared with professional institutions such as hospitals or police stations.
  + As privacy leak is becoming a serious problem(in our daily life), one major challenge is setting access rights to data clearly.
  + Our application has high expectations on situations when making intentional sounds or calling help directly is difficult.
  + It is especially helpful in homes with young children or elders.
* Timeline
  + Main program installation and study (~11/5)
  + Algorithm design (~11/15)
  + Dataset creation (~11/25)
  + Model running and Demo test (~12/5)
  + Paper works and submission (~12/10)