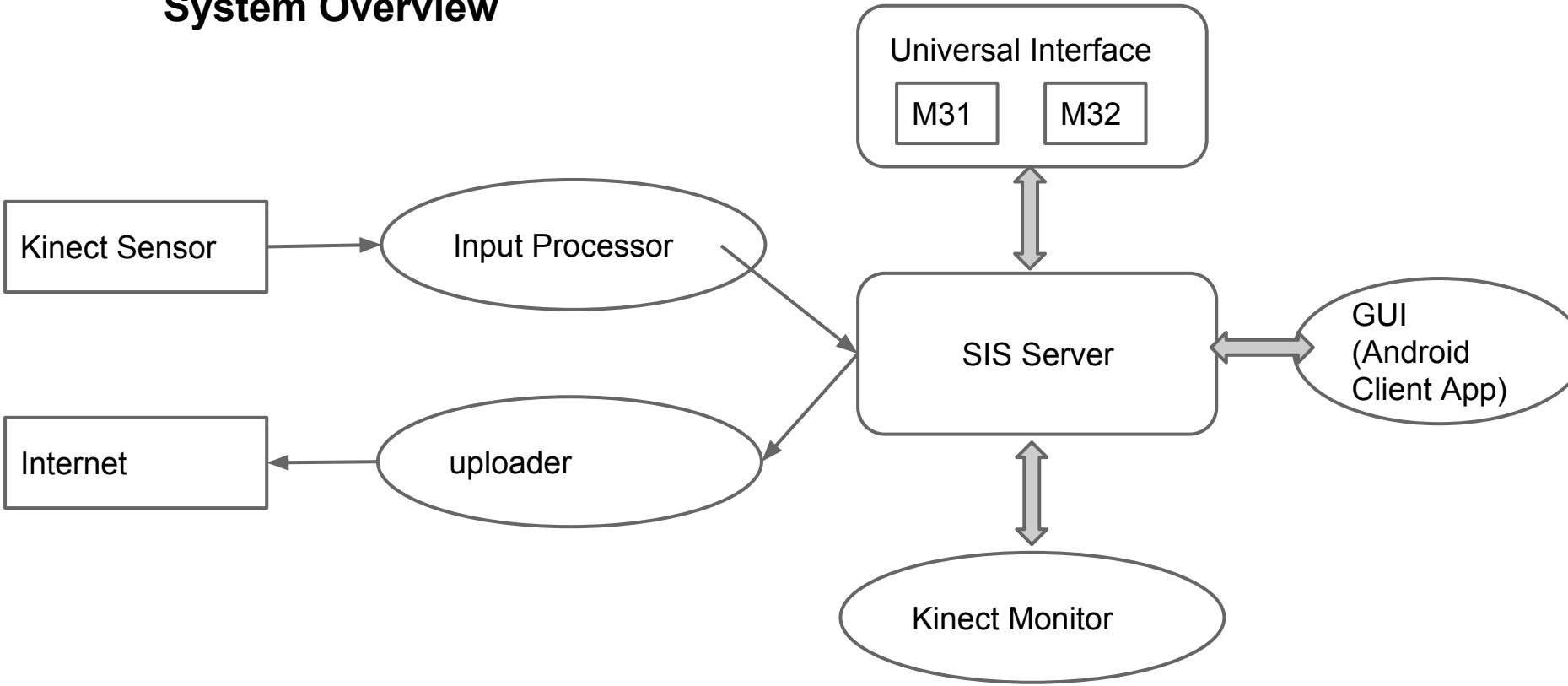
Motivation: Using SIS server to improve the quality of the health care system, more specifically , to increase the accuracy of the dangerous movement recognition for old people, (e.g. fall detection, no motion for a long time) .

System Overview



messages:

MsgID:20 **Description**: Create GUI Component **Example**:CreateGUI.XML**Variables**:

- **Passcode**: ****
- **SecurityLevel**: 3
- **Name**: GUI (Name of created Component)
- **SourceCode**: Gui.jar (Source code file name of created Component)
- **InputMsgID 1**: 32 (Fall detection Alert)
- **InputMsgID 2**: 34 (No motion for a long time Alert)
- **OutputMsgID 1**: 20 (Create BBB Component)
- **OutputMsgID 2**: 21 (Create ABB Compoment)
- **OutputMsgID 3**: 22 (Kill Component)
- **Component Description**: GUI displays the vital signals and manage SIS

MsgID:20 **Description**: Create InputProcessor Component **Example**:CreateInputProcessor.XML**Variables**:

- **Passcode**: ****
- **SecurityLevel**: 3
- **Name**: InputProcessor (Name of created Component)
- **SourceCode**: InputProcessor.jar (Source code file name of created Component)
- **InputMsgID 1**: 30 (Kinect Sensor Data Input)
- **OutputMsgID 1**: 31 (Depth & color information of the movement for each frame)
- **Component Description**: InputProcessor parses the data and extracts vital signals.

MsgID:21**Description**: Create Kinect Dangerous Move Monitor Component **Example**:CreateKinectMonitor.XML**Variables**:

- **Passcode**: ****
- **SecurityLevel**: 3
- **Name**: Kinect Dangerous Move Monito (Name of created Component)
- **SourceCode**: KinectMonitor.jar (Source code file name of created Component)
- **InputMsgID 1**: 31 (Depth & color information of the movement for each frame)
- **OutputMsgID 1**: 32 (Fall detection Alert)
- **OutputMsgID 2**: 34 (No motion for a long time Alert)
- **Component Description**: KinectMonitor checks for abnormality.

MsgID:20**Description**: Create Uploader Component**Example**:CreateUploader.XML**Variables**:

- **Passcode**: ****
- **SecurityLevel**: 3
- **Name**: Uploader (Name of created Component)
- **SourceCode**: Uploader.jar (Source code file name of created Component)
- **InputMsgID 1**: 32 (Fall detection Alert)
- **InputMsgID 2**: 34 (No motion for a long time Alert)
- **OutputMsgID 1**: 37 (General Health Readings)
- **Component Description**: Uploader uploads patients medical condition to remote database

scenario: describe step-by-step the operations.

Initialization :

UniversalInterface sends Msg 20 (BBB create) to SISserver to instantiate/activate GUI

UniversalInterface sends Msg 20 (BBB create) to SISserver to instantiate/activate InputProcessor

UniversalInterface sends Msg 21 (ABB create) to SISserver to instantiate/activate Kinect Dangerous Move Monitor

A Scenario

GUI interacts with the user and sends Msg 45 (user profile) containing UserName, Age, Sex, Weight, Height and medical conditions, to Uploader and all Monitors.

HealthSensors sends Msg 30 (Kinect Sensor Data Input) to InputProcessor, which parses the data and extracts vital signals.

InputProcessor sends Msg 31 (blood pressure reading) to Kinect Dangerous Move Monitor , which checks for abnormality. This is the place where we should implement the dangerous movement detection algorithm.

Kinect Dangerous Move Monitor sends Msg 32 (fall detection alert)or Msg 34(no motion for a long time alert) to GUI, which displays the vital signals.

Kinect Dangerous Move Monitor sends Msg 32 (fall detection alert)or Msg 34(no motion for a long time alert) to Uploader, which uploads patient's UserName and medical conditions to remote database. (Uploader accepts Msg 32 and uploads it.