FINAL YEAR PROJECT PROPOSAL

- **Title:** Alexa, who is it?

- **Project Definition**

  Recently, production companies are streamlining their prototype development process with Raspberry Pi. The microcomputer offers a variety of features, including four USB ports, an Ethernet port, an HDMI port and additional hardware equipment's like camera, etc.,

  This project uses the Raspberry pi camera and a facial recognition API with integration of Alexa to recognize a person's face and store it in the database.

  The main objective of this project is to use the camera module of the raspberry Pi to detect the face of a person using face recognition API at the door of the house and help Alexa to recognize the face using the database and to improve her recognizing skills each time the person visits the home.

  Scope:

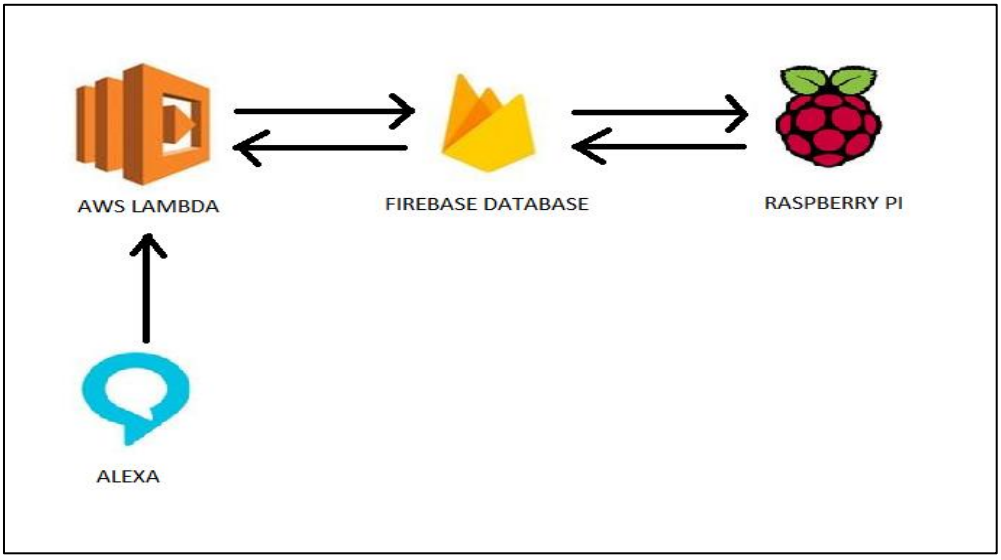
  This project will consist of designing VUI, implementing and integrating a number of modules to process facial recognition. This project is expected to be completed by January 2019

- **Project Plan:**

  Steps that will be carried out are-

  1. Gain an understanding of the Raspberry Pi3, its interfaces and integrated development environment (IDE).
  2. Gain an understanding about the AWS Lambda and the Firebase DB.
  3. Design and simulate the VUI.
  4. Develop, implement and test the necessary code to operate the modules in real-time on the Raspberry Pi.
  5. Create a Firebase DB
  6. Design and develop the necessary interface circuitry for the camera module on the Raspberry Pi
  7. Integrate the different modules together
  8. Integrate Alexa
  9. Verify the operation using real-time environment.

- **Sample running of the project below shows the flow of data:**



- **Technologies:**

  Raspberry Pi 3:

  Raspberry Pi 3 Model B was released in February 2016 with a 64 bit quad core processor, on-board Wi-Fi, Bluetooth and USB boot capabilities. On Pi Day 2018 model 3B+ appeared with a faster 1.4 GHz processor and a three times faster network based on gigabit Ethernet (300 Mbit / s) or 2.4 / 5 GHz dual-band Wi-Fi (100 Mbit / s). Other options are: Power over Ethernet (PoE), USB boot and network boot (an SD card is no longer required).

  MATLAB:

  MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and proprietary programming language developed by MathWorks. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, C#, Java, Fortran and Python.

  AWS Lambda:

  The AWS Cloud provides a broad set of infrastructure services, such as computing power, storage options, networking and databases, delivered as a utility: on-demand, available in seconds, with pay-as-you-go pricing.

Firebase DB:

The Firebase Realtime Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, real-time events continue to fire, giving the end user a responsive experience. The Realtime Database is a NoSQL database.

- **Resources Required:**

  This project will be implemented using the three main resources:

  - A pc with MATLAB
  - Alexa device
  - Raspberry Pi 3
  - Raspberry Pi Camera Module