



# Alexa Programming





# Welcome!

**I'm Aniruddha  
Nandi**

Junior, CS | Project AI Lead @ UBRobotics





1

# How it works

Brief explanation of the underlying technologies powering Alexa

Alexa is a Voice User Interface (VUI), that lets you speak commands, instead of clicking buttons or typing on your keyboard.



Speech



Request



Response





# Speech Recognition

- ◇ ASR - Automatic Speech Recognition
  - Enables the recognition and translation of spoken language into text by computers
- ◇ NLP - Natural Language Understanding
  - Deals with how to handle unstructured inputs governed by flexible rules & convert them into a machine readable format
- ◇ TTS - Text to Speech





2

# Alexa Skills

What kind of skills is Alexa capable of handling?



# Types of Alexa Skills

- ◇ Custom
  - Fact Skill
  - How-To Skill
  - Team Lookup Skill
  - Calendar Reader Skill
- ◇ List
- ◇ Video
- ◇ Smart Home
- ◇ Flash Briefing
- ◇ Games and Trivia

> [ASK-Overview](#)

> [Tutorials](#)





3

# Getting Started

More on IDE's, Echo Emulator, Alexa Dev Console & AWS Lambda



A decorative graphic in the top-left corner consisting of several overlapping hexagons in various shades of blue and cyan. The largest hexagon is a bright cyan, with smaller ones in darker and lighter shades around it.

# Alexa VUI Interface

## Front-End

The Alexa Skills Kit handles text to speech, converting the audio into a machine comprehensible format

## Back-End

The logic code that actually powers the app. Usually this is written on a service called AWS Lambda. It takes the parsed speech and does something interesting with it






# Alexa VUI Interface



Alexa Skills Kit

**Alexa Skill**

AWS Lambda





# Developer Tools

AWS Lambda is an event-driven computing platform; it runs when triggered by an event and executes code that's been loaded into the system. You don't need to setup or manage any servers, just write the code and Amazon takes care of the rest

- > [Atom](#)
- > [AWS Lambda](#)
- > [Alexa Skills Kit](#)
- > [Echo Emulator](#)





4

# Platform Capabilities

Alexa Voice Services API & SDK, EC2 Compute, IoT extensions



# Hacking with Alexa

- ◇ SDK & IDE Extensions
  - Node.js SDK
  - JetBrains Webstorm
- ◇ API's
  - Skill Management API
  - Smart Home Skill API
  - Video Skill API
  - Flash Briefing Skill API
  - List Skill API
  - Alexa for Business API

- ◇ TTS Customization
  - SSML
- ◇ Production Testing
  - Skill Beta-Testing Tool

- ◇ Data-driven Interaction
  - AWS Lambda Slots
- ◇ Chatbot Customizations
  - Amazon Lex

[Slots \(Lambda Compute\)](#)

[Amazon Lex](#)

[Alexa Build Page](#)





Thanks!

