# SMARTCARe^


# Alzheimer's Disease…

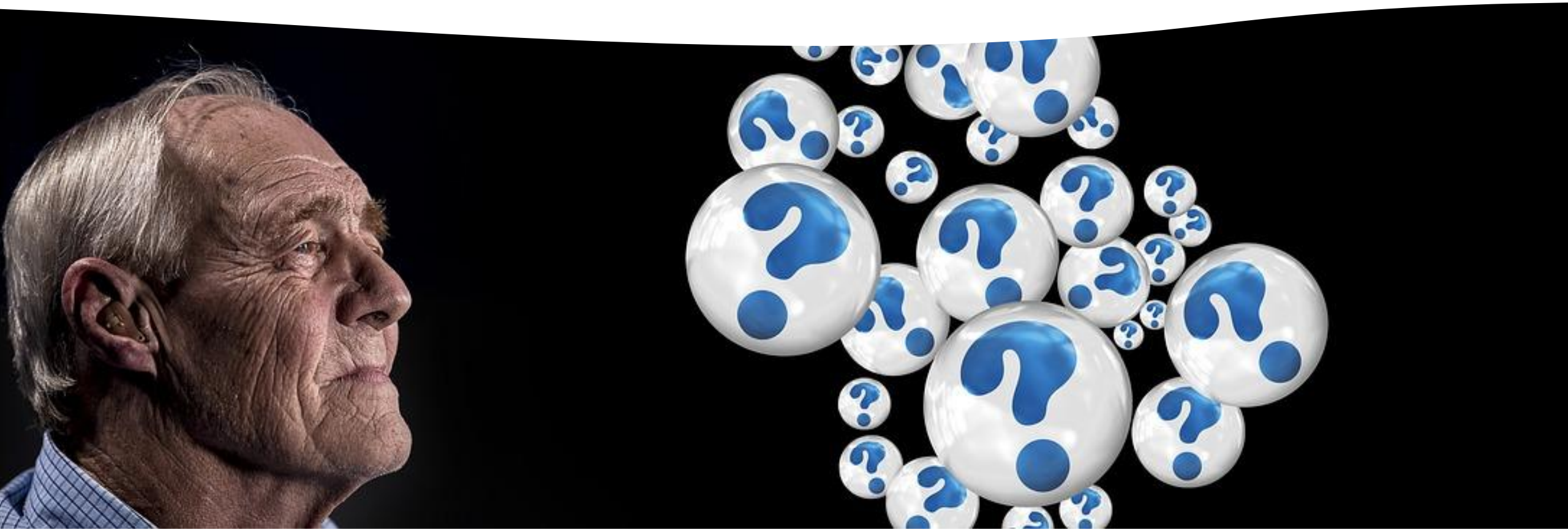
•Unchangeable, growing brain disease that gradually damages memory and reasoning abilities.

- Symptoms included memory loss, language problems, and unpredictable behaviour.

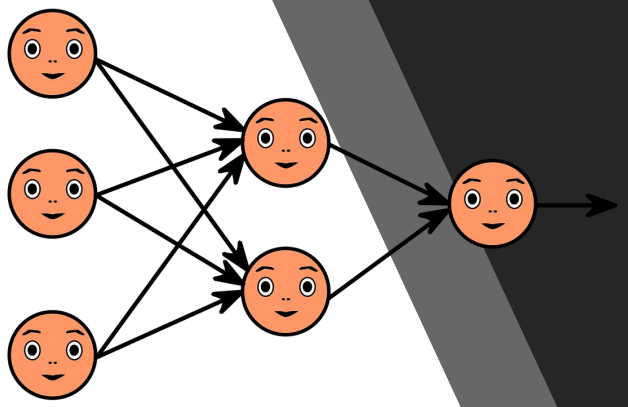
- It complete changes the quality of life for the patient, for the family & caregiver.

# Challenges Family & Caregivers

- Lack of communication and comprehension.
- It is strenuous to decide others quality of life.
- Economical expenses in the treatment or home assistance.

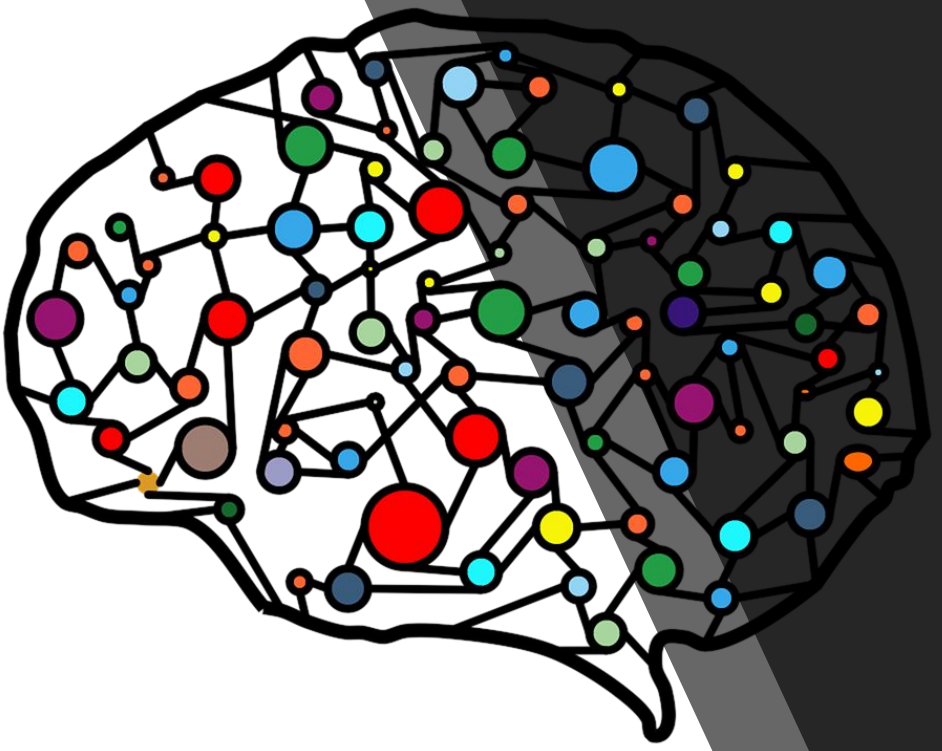


# Solution



- Machine Learning
- Face & Voice Recognition
- Aws Alexa skills

# Machine Learning



- Extracting data from previous patient cases nor official information from hospitals or researchers.
- Creating a Dataset model with different categories: behavior, intention, entities and actions to take.
- Training the model using Python and NLTK libraries to create the first machine learning method depending on the data gathered.

# Face and Voice Recognition

- Elaboration of a face album representing different moods and conducts from the patient.
- Extracting face sentiment analysis  using Amazon Rekognition.
- Communication with patient using Amazon Alexa with pre-configured skills.
- Using Amazon Comprehend to Analyze voice interaction, detecting sentiments and keywords.
- Parsing Face & voice Recognition to build a  Deep Learning method using the information attained.

# Alexa Skills

Alexa will interact and monitor the patient 24/7.

Alexa process all the information to Aws Lambda which compares and analyses with the

Dataset(Libraries), in case of a matching pattern Aws Lambda will alert the family.

Alexa is scalable with thousands of smart home devices, could monitor fire alarms , door lock , and room temperature.

# Python & NLTK Intentions

```
# Greetings intent
---
type: intent
name: Saludation
utterances:
  - How are you doing?
  - What's the craic?
  - How are things?
  - Hello there


# turnLightOff intent
---
type: intent
name: turnLightOff
slots:
  - name: room
    entity: room
utterances:
  - Turn off the lights in the [room](entrance)
  - turn the [room](bathroom)'s light out please
  - switch off the light the [room](kitchen), will you?
  - Switch the [room](bedroom)'s lights off please
```

```
 "slots": []
}
{'intentName': 'Saludation', 'probability': 1.0}
(project) chris@DESKTOP-CV63OPT:~/virtualenv/pythontest$ python test2.py
{
 "input": "Hello ",
 "intent": {
  "intentName": "Saludation",
  "probability": 0.6716714544755923
 },
 "slots": []
}
{'intentName': 'Saludation', 'probability': 0.6716714544755923}
(project) chris@DESKTOP-CV63OPT:~/virtualenv/pythontest$ python test2.py
{
 "input": "How are you ",
 "intent": {
  "intentName": "Saludation",
  "probability": 0.5740449029617796
 },
 "slots": []
}
{'intentName': 'Saludation', 'probability': 0.5740449029617796}
(project) chris@DESKTOP-CV63OPT:~/virtualenv/pythontest$ python test2.py
{
 "input": "How have you been? ",
 "intent": {
  "intentName": "Saludation",
  "probability": 0.7212583653834737
 },
 "slots": []
}
{'intentName': 'Saludation', 'probability': 0.7212583653834737}
```

# Python NLTK Extraction of Words

st2.py

```
import io
import json

with io.open("/home/chris/virtualenv/pythontest/sample/sample_dataset.json") as f:
    sample_dataset = json.load(f)

from snips_nlu import SnipsNLUEngine

nlu_engine = SnipsNLUEngine()
nlu_engine.fit(sample_dataset)

parsing = nlu_engine.parse(u"How have you been? ")
print(json.dumps(parsing, indent=1))
print(parsing["intent"])
```

```
(project) chris@DESKTOP-CV630PT:~/virtualenv/pythontest$ python test.py
Hello user_name! How are you doing today?: Interesint job
I can hear you! You said: Interesting job
['Interesting', 'job']
['excite the curiosity of; engage the interest of', 'be on the mind of',
(project) chris@DESKTOP-CV630PT:~/virtualenv/pythontest$
```