Artificial Intelligence

WHAT IS A.I.?

- “A computer program that tries to understand the activities going on in the world around just like human beings by applying a certain level of intelligence. The computer program, with its ability to form models, can infer a set of actions that would be benefitting the world in a desired manner”
- AI is making a machine that simulates human intelligence to identify and use the right pieces of knowledge at the time of decision-making and solving problems

Why should we care?

- Self Driving cars.
- Your phone, Recommendations, check tomorrow’s weather, talk to Siri or Alo.
- Your email spam filter is a classic type of ANI
- Facebook and amazon recommendations.
- Google translate
- World’s best Checkers, Chess, Scrabble, Backgammon, and Othello players.
- Google search ranking system.

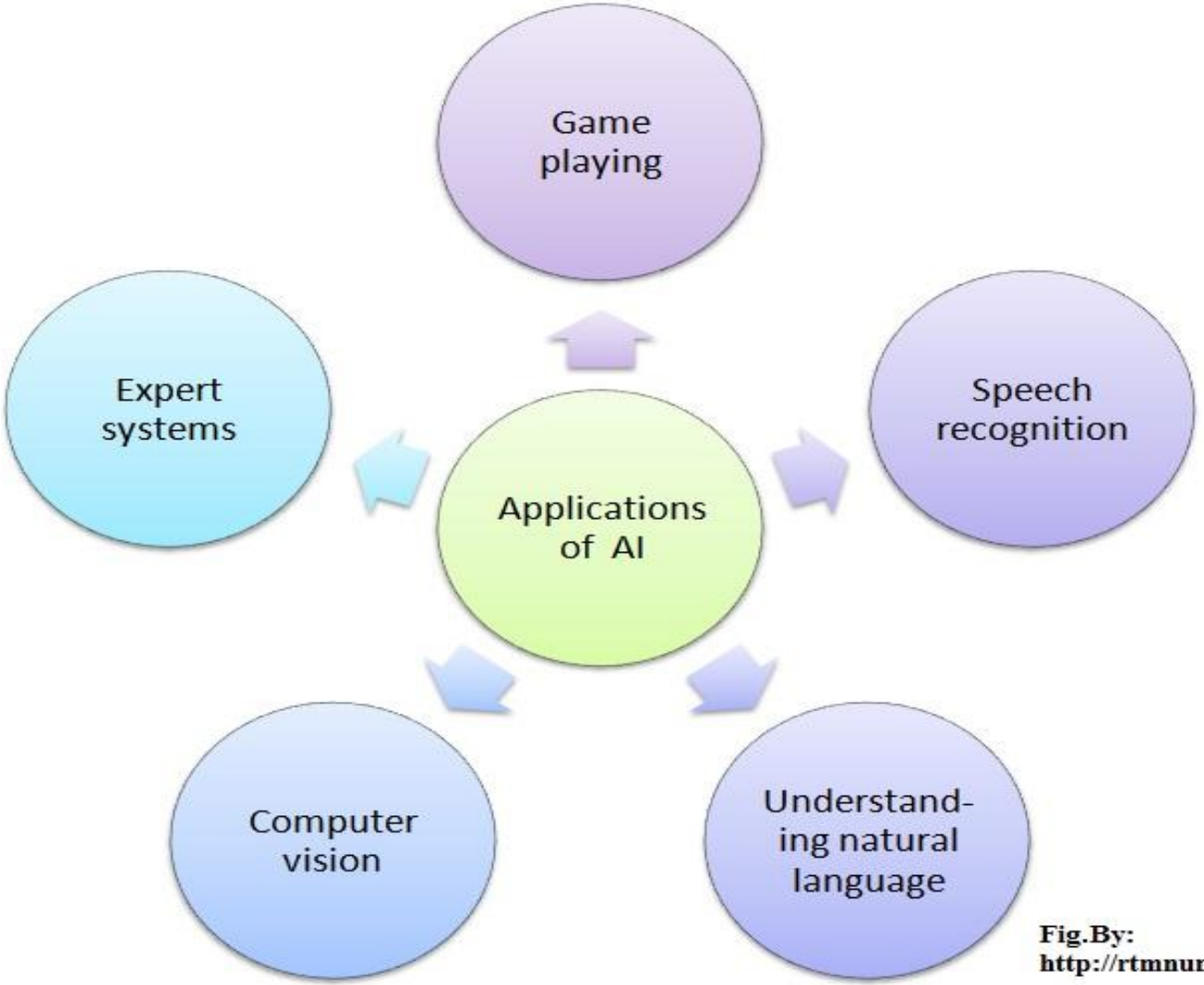


Fig.By:
http://rtmnumobile.blogspot.com

Computer vision

- Faces/object detection
- Object character recognition.
- Understanding images as humans do is the main task.

Speech Analysis

- Applications that identify the speaker or converts speech into text and text into speech.
- Audio tone analysis are also considered in this category

Natural language Processing

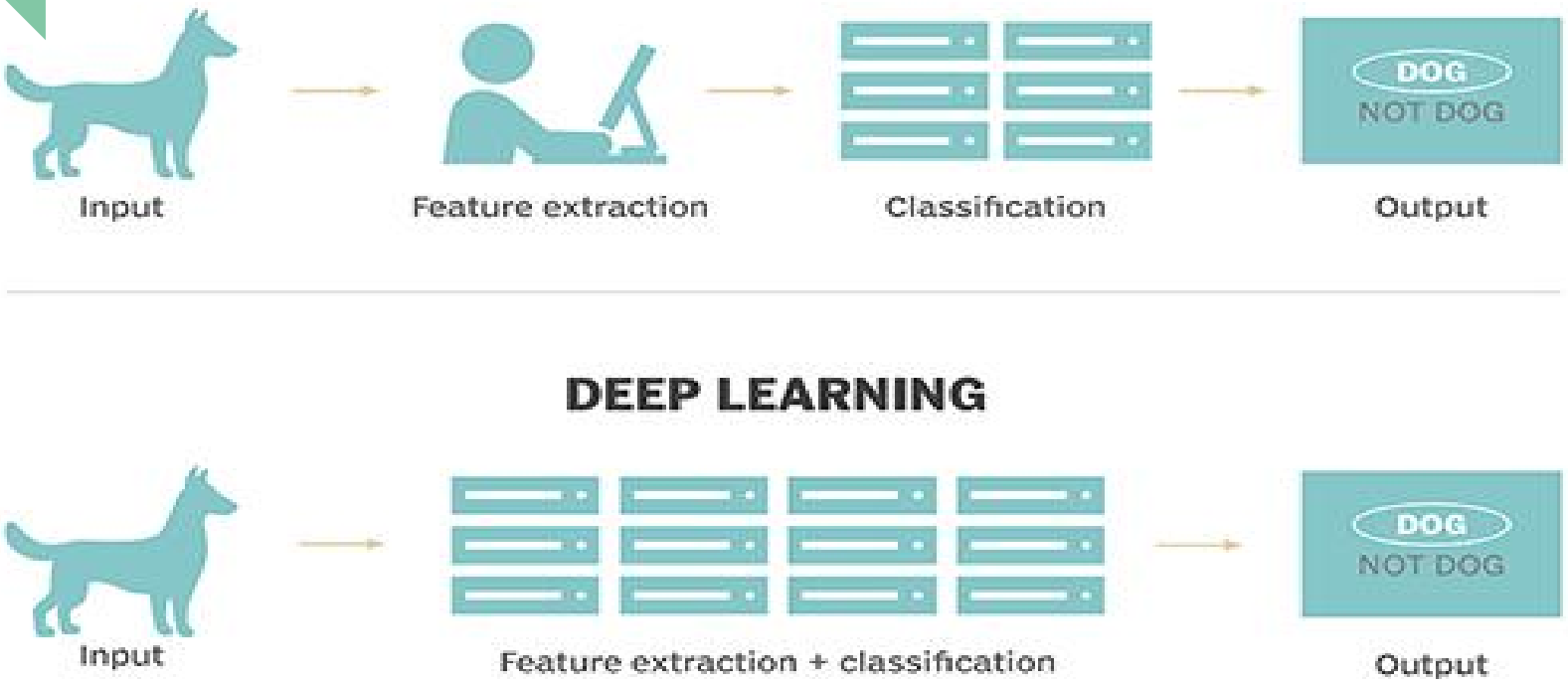
- Applications that use natural language processing to classify the text/labels/intents and to extract entities so as to build chatbot/conversations.
- Semantic concept extraction, language translation, document summarization, document similarity, sentiment analysis

Machine Learning

A computer program is said to learn from experience *E* with respect to some class of tasks *T* and performance measure *P* if its performance at tasks in *T*, as measured by *P*, improves with experience *E.*

Deep Learning

Deep learning, a subset of machine learning, utilizes a hierarchical level of artificial neural networks to carry out the process of machine learning. The artificial neural networks are built like the human brain, with neuron nodes connected together like a web.


TRADITIONAL MACHINE LEARNING
DOG
NOT DOG
Input
Feature extraction
Classification
Output
DEEP LEARNING
DOG
NOT DOG
Input
Feature extraction + classification
Output

Computer Vision

- **OpenCV (Open Source Computer Vision) :** A library of programming functions mainly aimed at real-time computer vision
- **Dlib :** A library of programming functions aimed at many things including computer vision
- Very similar to OpenCV but mainly used for face detection and face recognition

Speech

Speech to Text: Sphinx, Google Speech to Text, Bing Speech to Text, Houndify, Wit.ai

Language

Python Packages such as **NLTK, spaCY**

Deep learning frameworks (Tensorflow, keras, caffe and torch)