

AI in Computer vision

By Eng.Ahmd Hisham





Deeplearning.ai brief notes

- Founded in 2017 by Andrew Ng, a global leader in AI.
- Most highlighted organization in ML/DL courses and specialization degrees.
- it has a variety of AI specializations , like deeplearning specialization/machine learning specialization, tensorflow in practice, generative modeling , NLP , AI for medicine , AI for everyone.



Brief introduction about the
speaker



- Graduated from MSA university faculty of Engineering communications and electronics
- Senior and Director of A.I(deep learning specialized) in AITC MUST
- Director and project manager of 3 stage deep learning system for covid-19, awareness ,prediction and initial diagnosis co-operated with Academy of science and research technology (ASRT) with fully fund
- Worked as deeplearning instructor in ITI 2019
- Instructor and part time A.I director at ArabCBT
- Speaker in AI opening conference in cairo university faculty of C.S and A.I 2019
- Speaker in Innovative day 8 IEEE Elminya
- Speaker in Iraqy Tomoh IT webinar



- Brief introduction about definition of artificial intelligence
- What is computer vision
- How to link Computer vision with Artificial intelligence
- Use cases of computer vision in our lives
- Combining NLP and CV in one architecture (attention architecture)
- How to prepare yourself for the market



What is AI ?





Artificial intelligence Brief definition

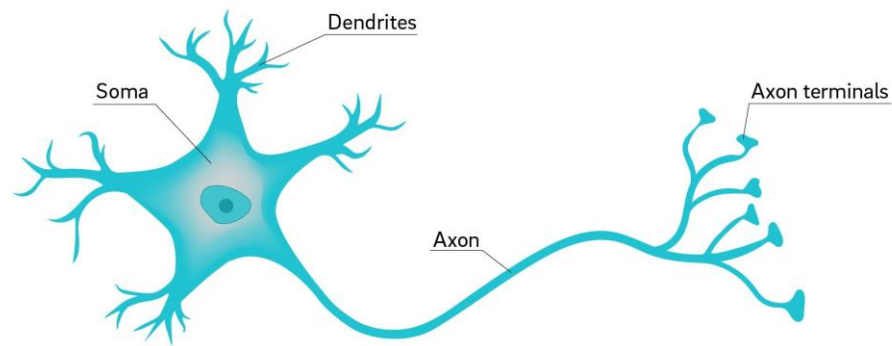
(A.I) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions

Therefore ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal.

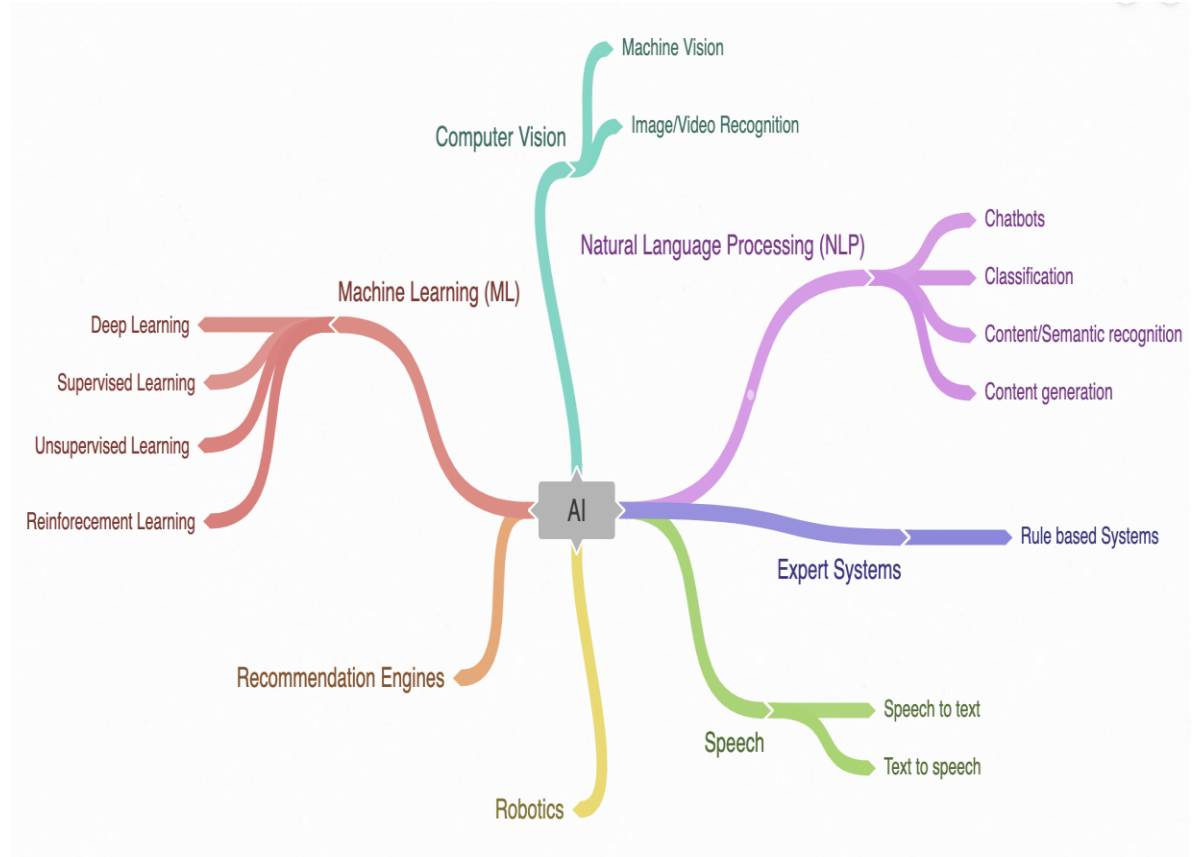


Inspired biologically

Neuron



Branches of A.I



Computervision



ComputerVision definition

Computer vision is the field of study surrounding how computers see and understand digital images and videos. Computer vision spans all tasks performed by biological vision systems, including "seeing" , understanding what is being seen, and extracting complex information into a form that can be used in other processes.

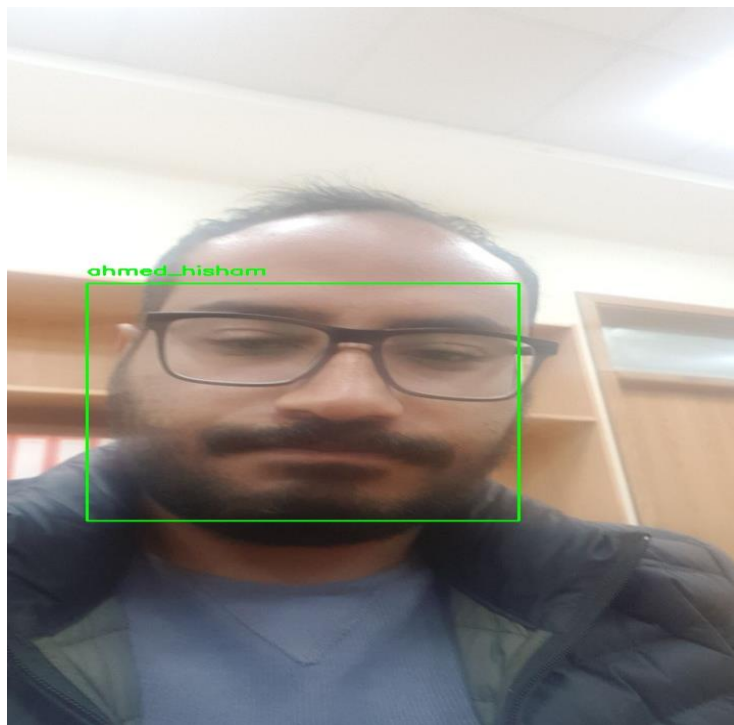


Applications of computervision

- Facial Recognition ▪
- Facial expression recognition (fer) ▪
- Object detection ▪
- Landmark detection ▪
- Self driving cars ▪
- Medical image analysis ▪
- Optical character recognition ▪
- etc ▪



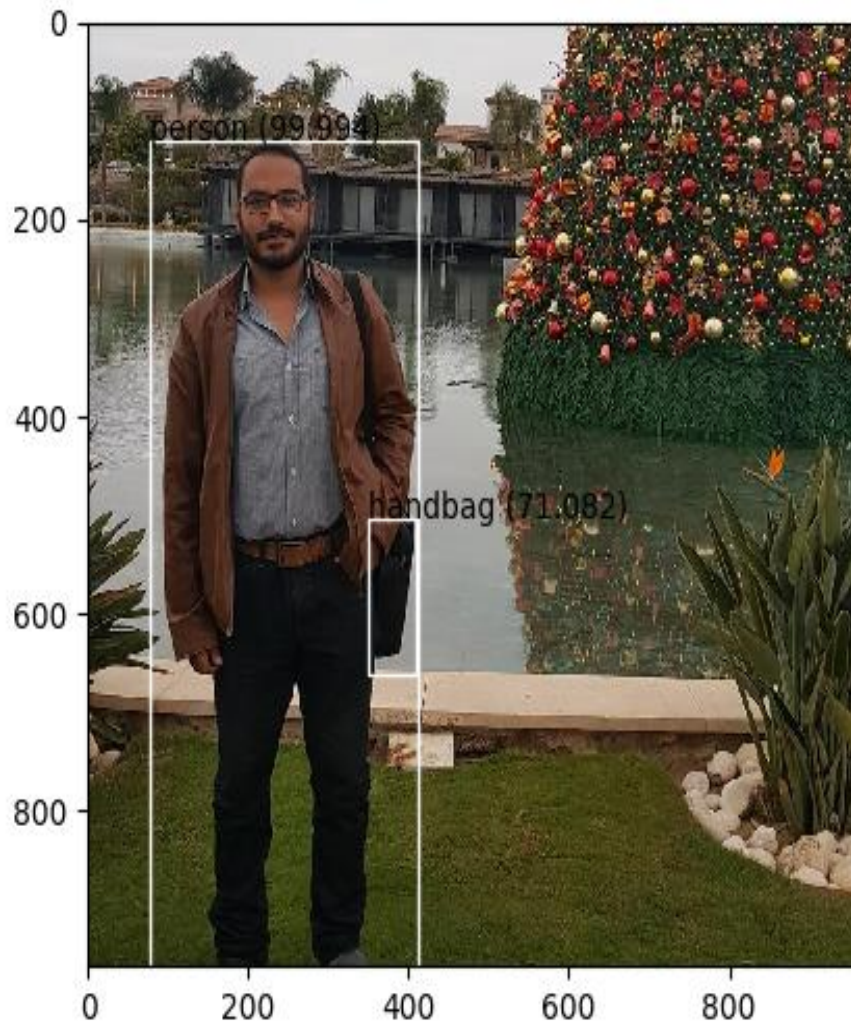
Facial recognition



Facial recognition



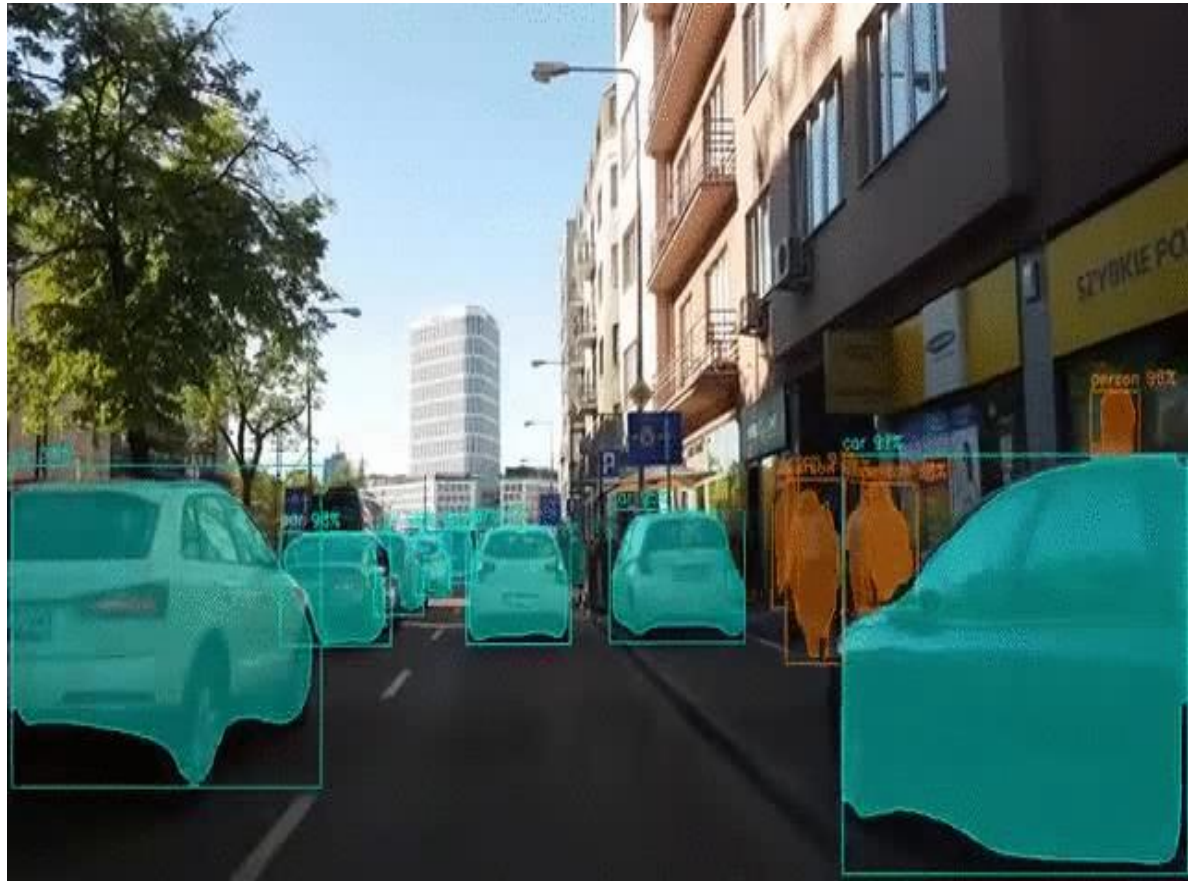
Object detection and recognition



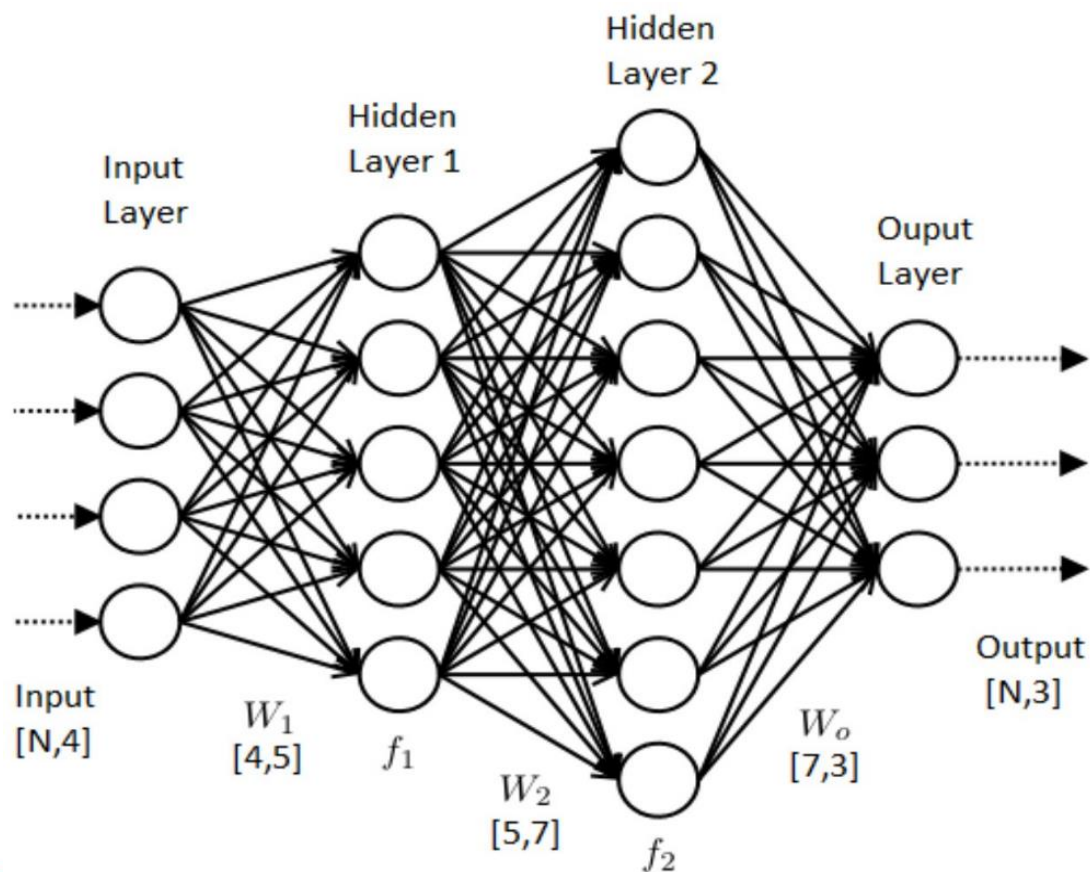
Object detection and recognition



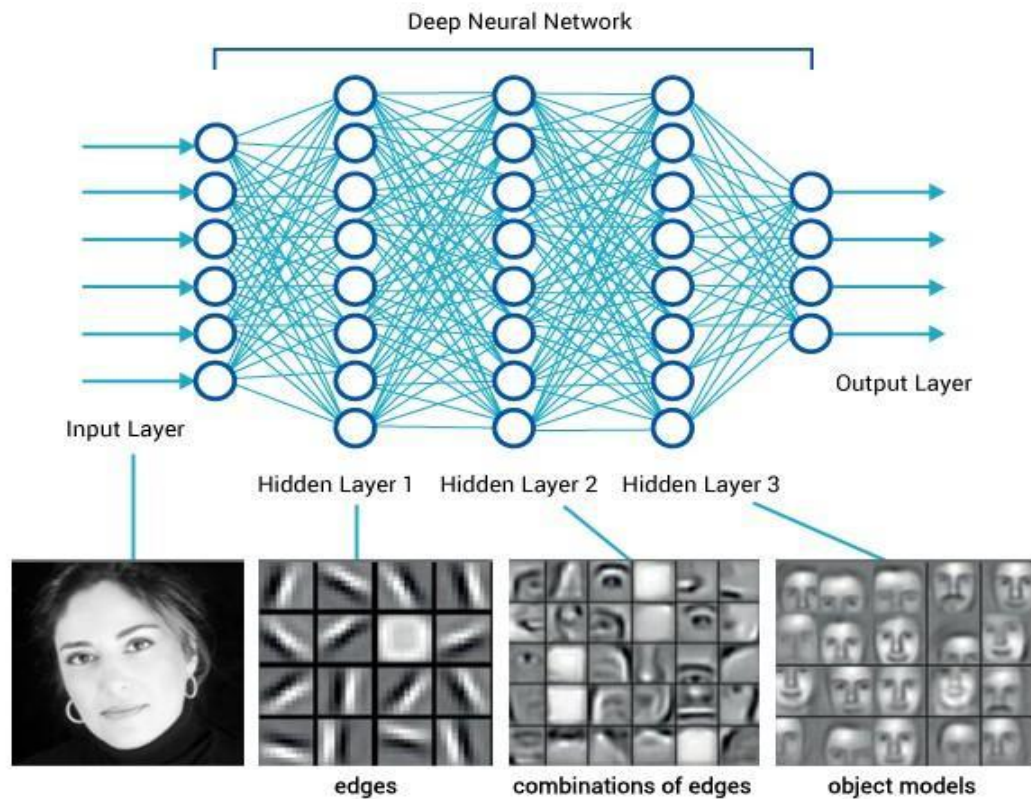
Image segmentation



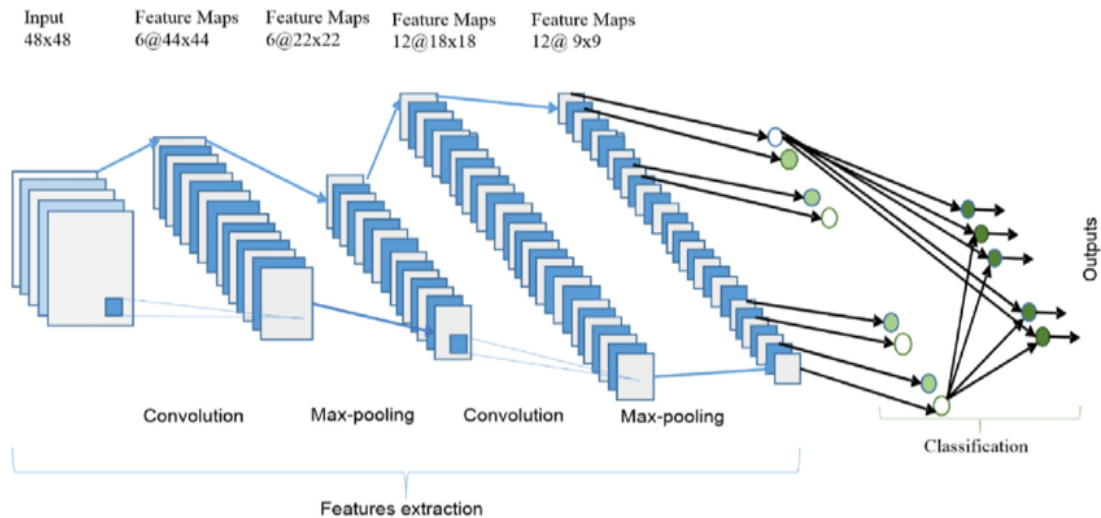
Neural networks



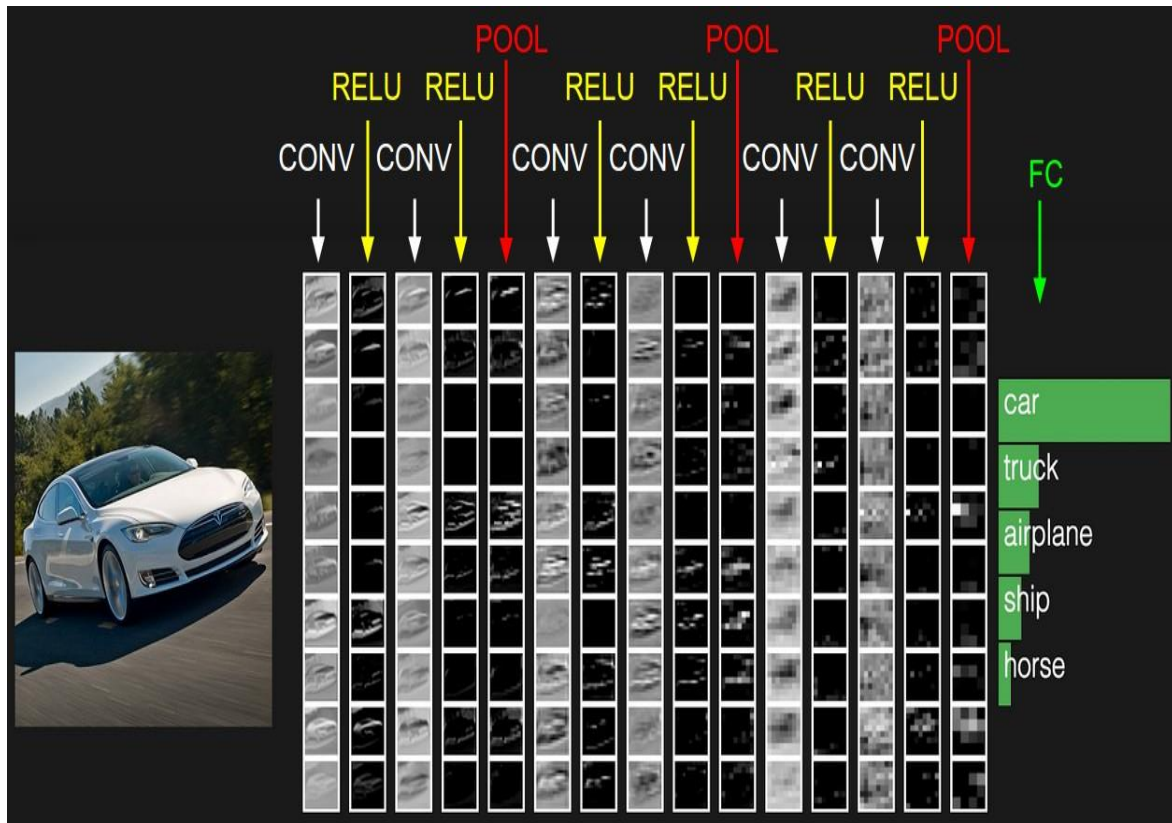
Neural networks



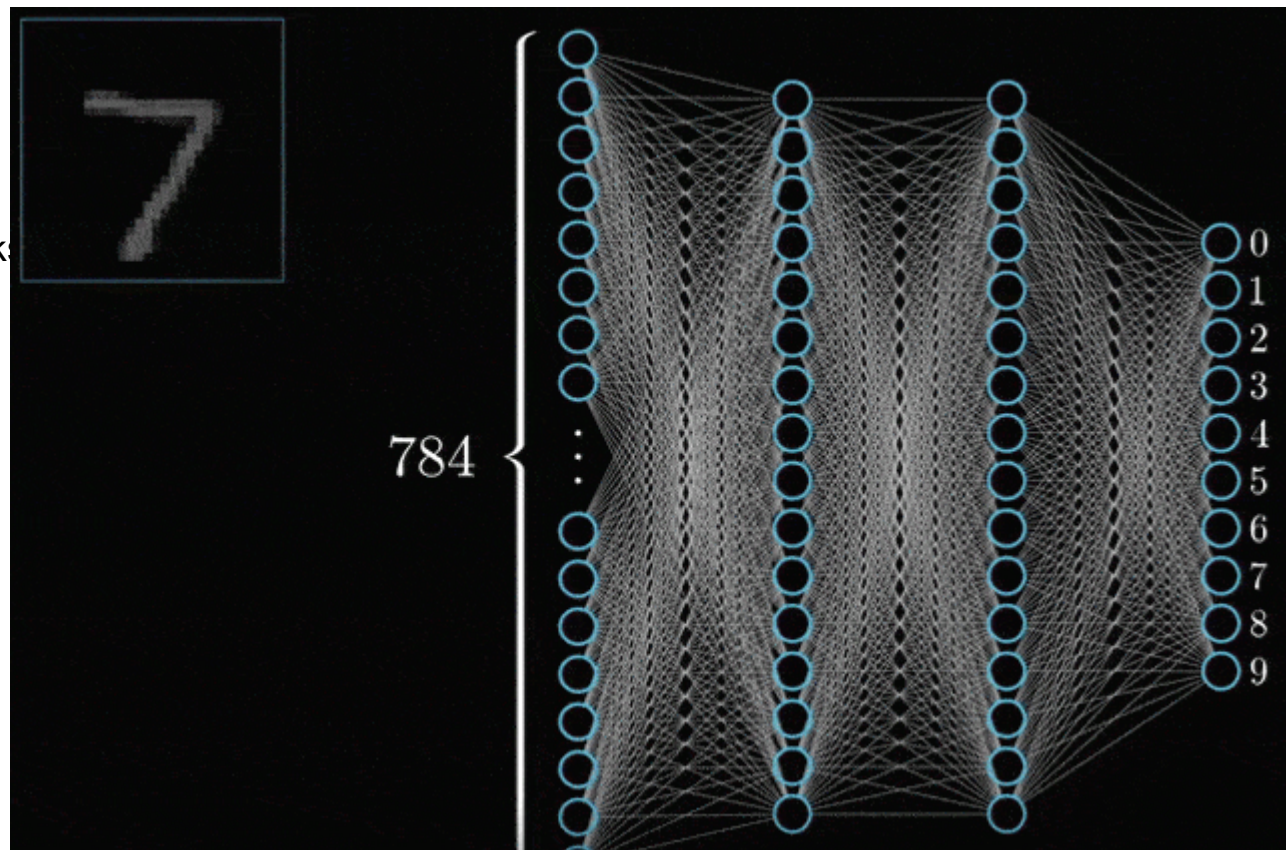
CNN

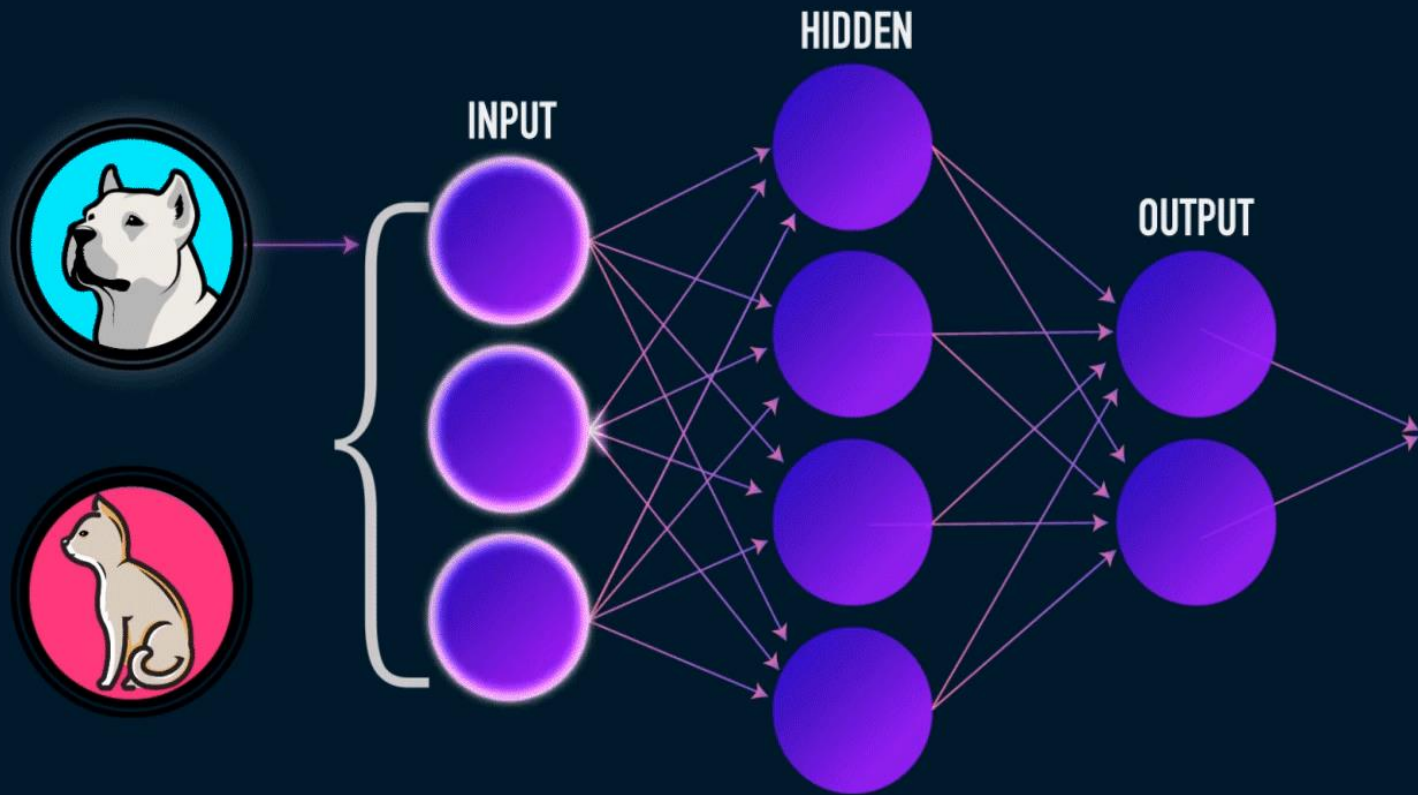


Neural networks

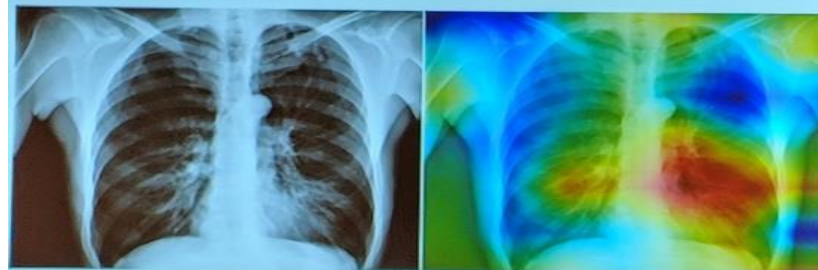
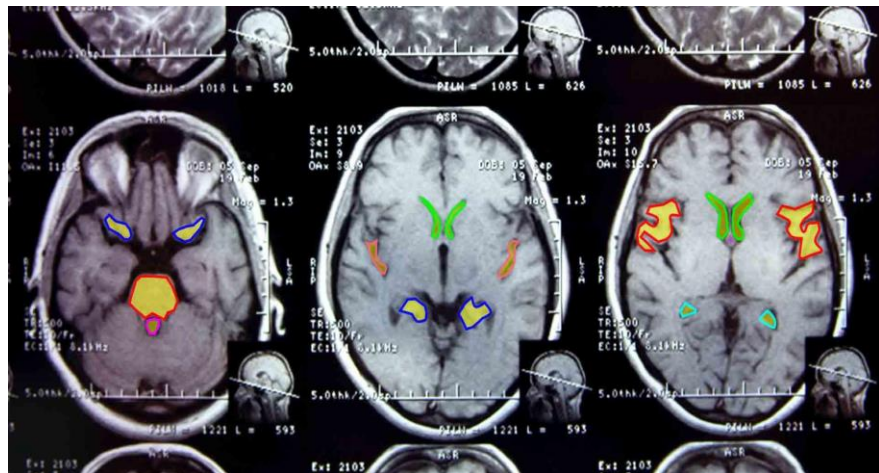


Neural network





Medical imaging

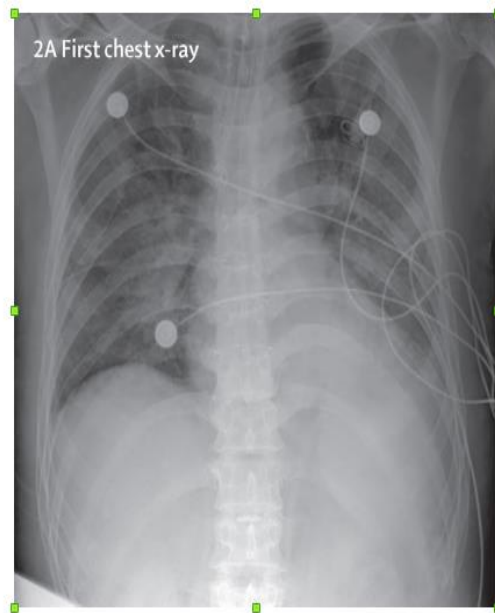


Input
Chest X-Ray Image

Output
Pneumonia Positive (85%)



Medical imaging through The covid-19 pandemic

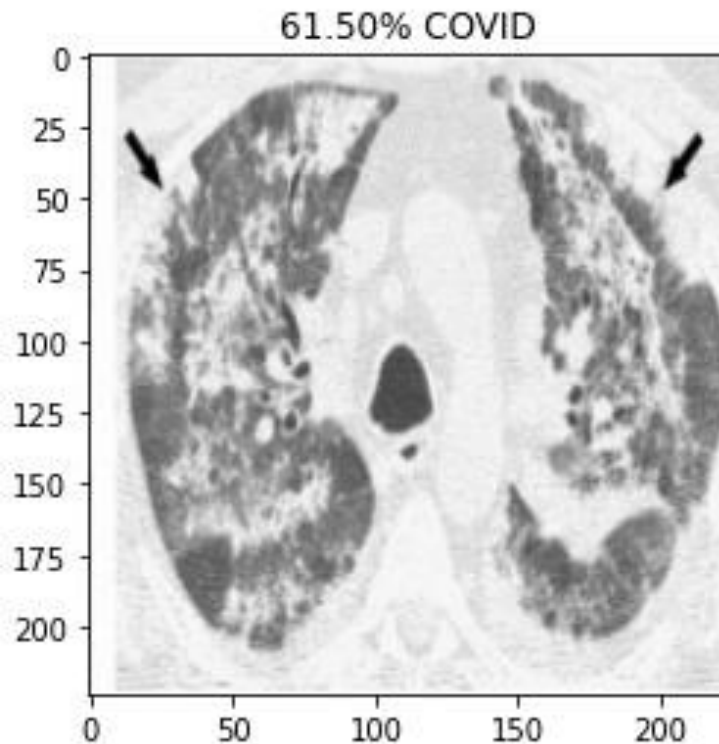


Chest x-ray for covid-19 patient



Chest x-ray for normal person

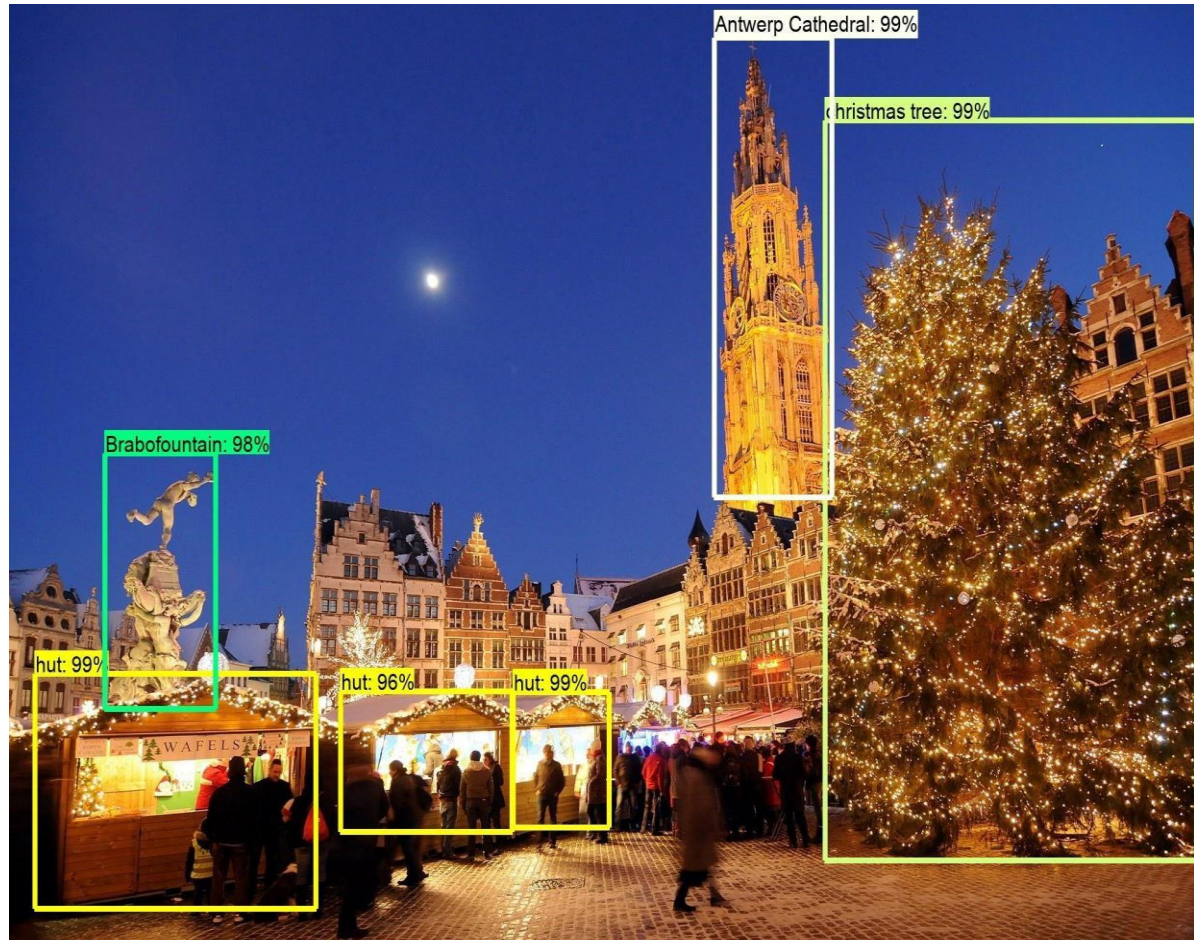
**Medical imaging through
The covid-19 pandemic**



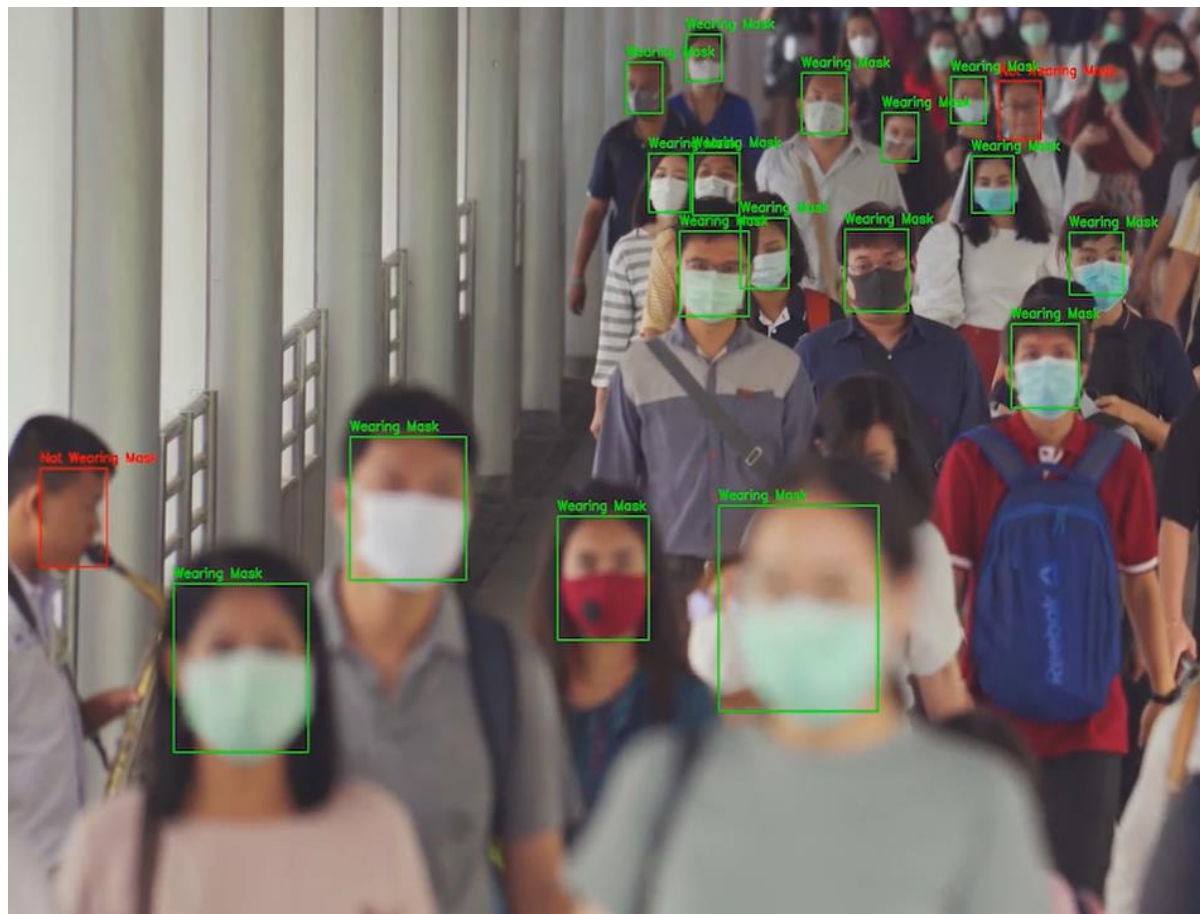
Optical character recognition



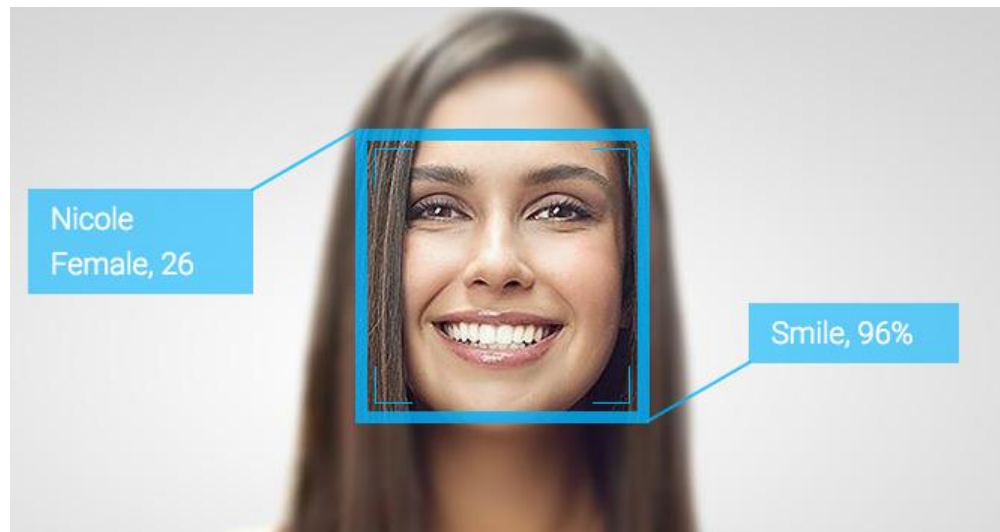
Land mark detection



Face mask detection



Gender and emotion recognition



Another Type of
Neural Networks

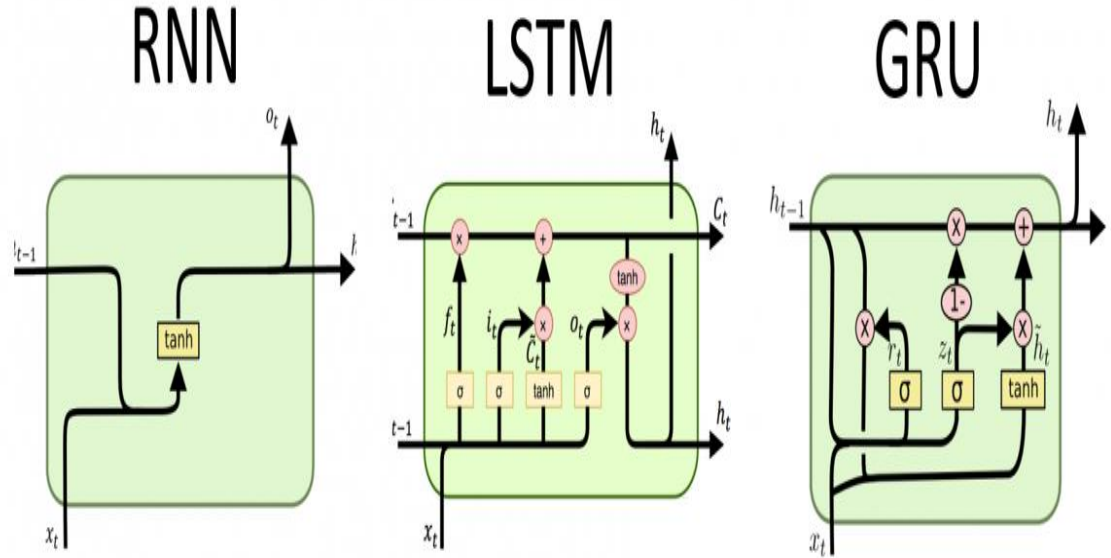


Image captioning with attention

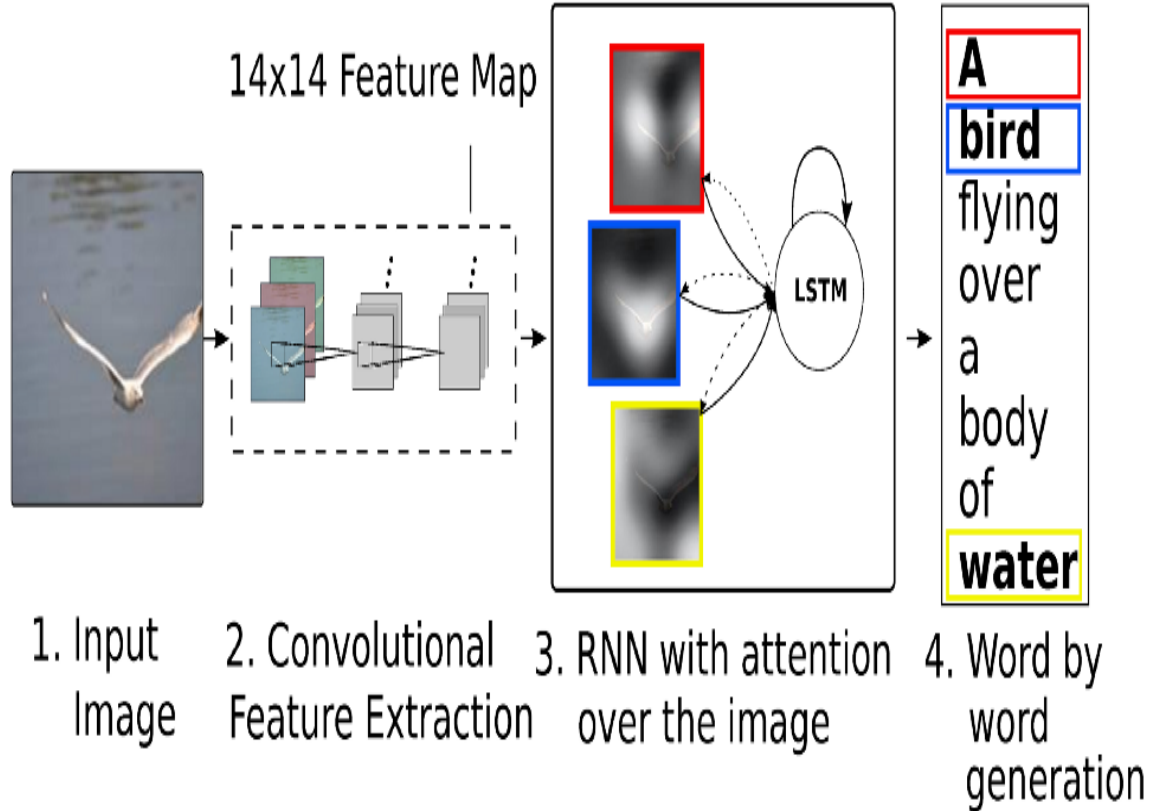
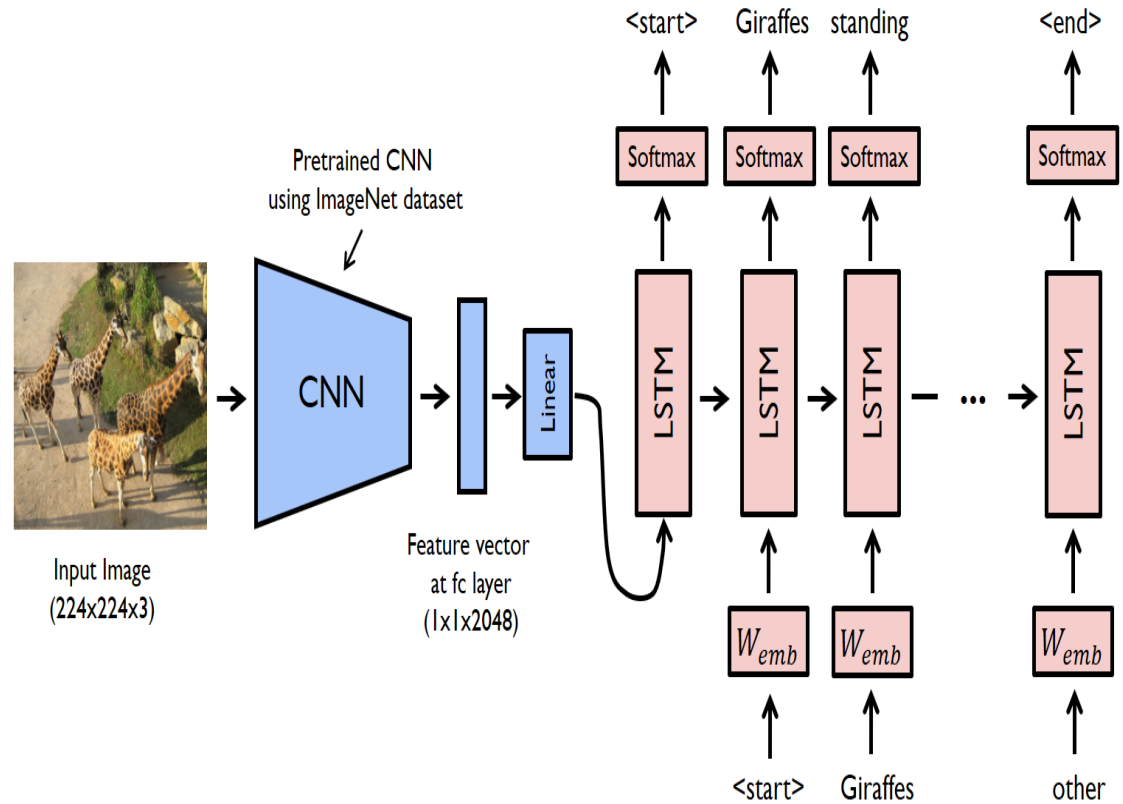


Image captioning with attention



Requirements

- Maths (linear algebra , statistics and probabilities , calculus)
- Problem solving skills
- Data structure and algorithm understanding
- Programming skills (python , matlab , c++ , java)
- Popular platforms and libraries (torch , tensorflow , caffe , sckitlearn , opencv , nltk , dialogflow)
- Knowledge of Deep learning/ machine learning from academic perspective
- Reading academic papers daily

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Thank you

