Tumor Detection Using Convolutional Neural Network

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Summary

Tumor in body

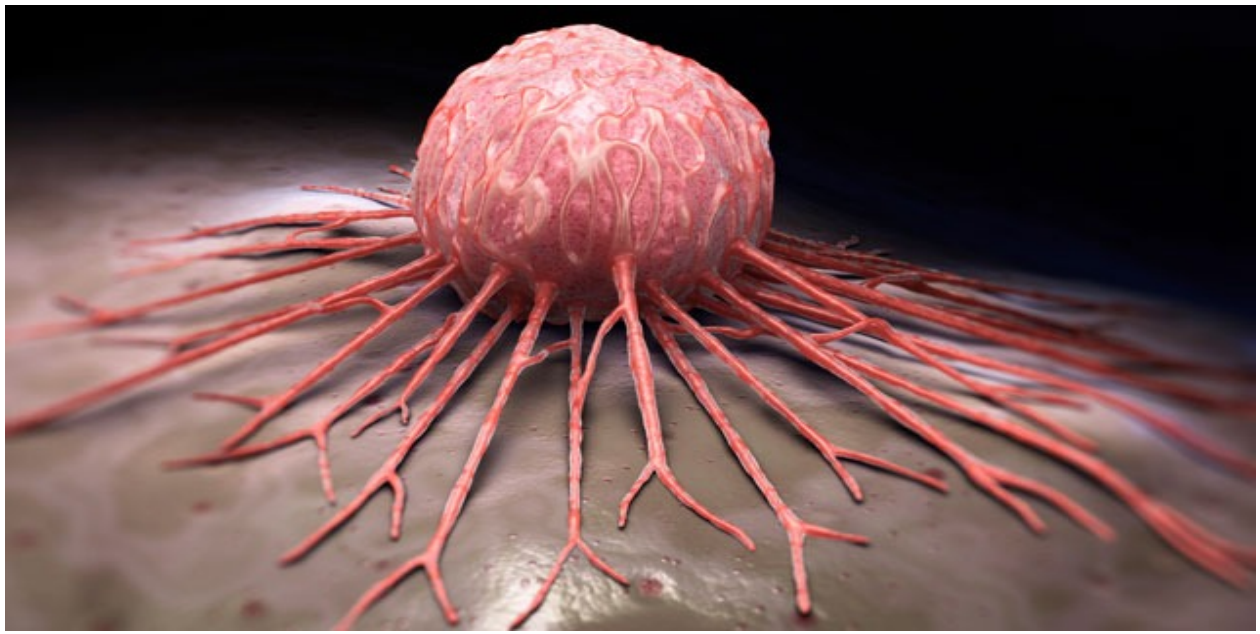

FIGURE – Body Tumor : From Google

Issue

- Find a way to diagnostic tumors cells from an image
- Extract features from the image
- Apply Convolutional Neuronal Network to layers

Input image and Dataset

- Image of patient's body
- Dataset of images from Database

Chart of steps

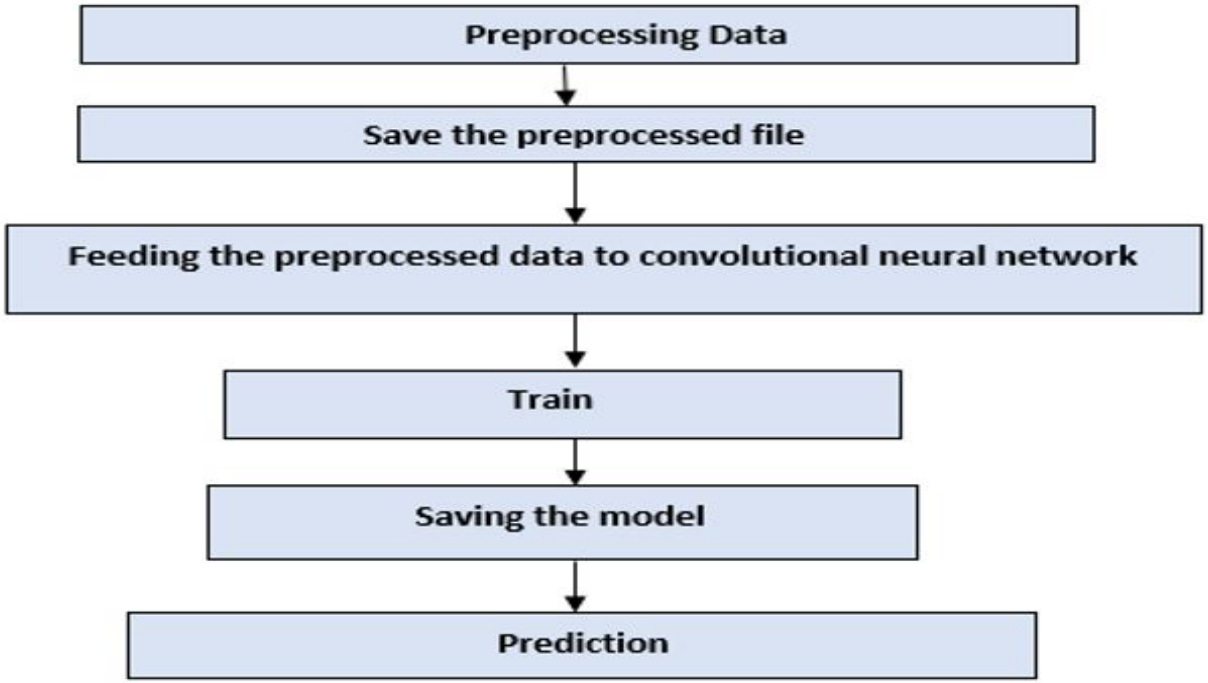

FIGURE – [1] Chart display steps of the model CNN, page 255

Step 1 : Preprocessing Data

- Convert all images to the gray-scale
- Resize images to reduce time of processing

Step 2 : Save the preprocessed file

- Binary labels : benign and malignant
- Classify each image of dataset to his class

Step 3 : Feeding the preprocessed data to CNN 1/3

5	3	2	1	7	4
3	5	8	9	1	3
2	5	6	0	1	4
1	6	7	1	0	2
6	2	4	0	8	2
2	5	4	2	3	9

$*$

1	0	-1
1	0	-1
1	0	-1

FIGURE – [1] Gray-scale Image 6x6 and the 3x3 filter, page 256

$$\sum_{i=0}^{m-1}\sum_{i=0}^{m-1} X_{(n-i)(n-j)}\, Y_{(i+1)(j+1)} \quad (1)$$

Step 3 : Result of Pooling 2/3

We get the result as follow :

-6	3	7	-1
-15	6	19	1
-8	12	8	-7
-6	10	4	-10

FIGURE – [1] 4x4 image after applying 3x3 filter to the gray-scale image, page 257

Step 3 : Max Pooling 3/3

Extract more features

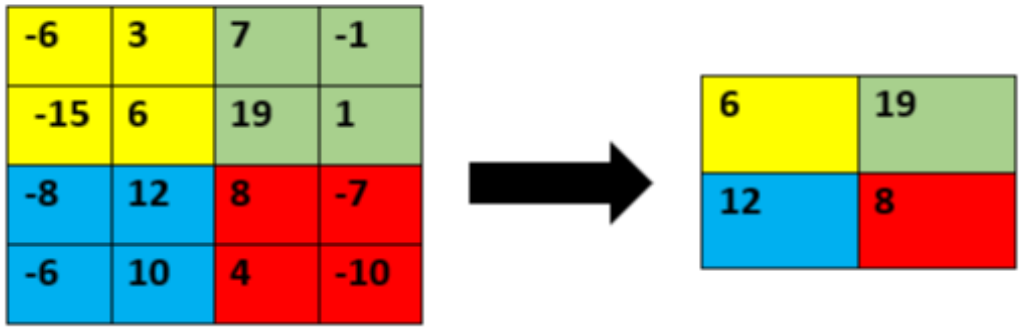

FIGURE – [1] Result after applying max pooling, page 257

Steps 4 and 5 : Train and save the model

- Train the model 200 times of epoch
- Save the model

Conclusion

- Helps dermatologist to dignostisic early skin cancer
- Hight accuracy with the model CNN

Reference

[1] Hasan, Samia Islam, Surajit Das Barman, Skin Cancer Detection Using Convolutional Neural Network,Mahamudul from the 2019 5th International Conference in April 2019, pages 254-258

Thank you for your attention...