

Home (<http://ipindia.nic.in/index.htm>) About Us (<http://ipindia.nic.in/about-us.htm>) Who's Who (<http://ipindia.nic.in/whos-who-page.htm>)
 Policy & Programs (<http://ipindia.nic.in/policy-pages.htm>) Achievements (<http://ipindia.nic.in/achievements-page.htm>)
 RTI (<http://ipindia.nic.in/right-to-information.htm>) Feedback (<https://ipindiaonline.gov.in/feedback>) Sitemap (<http://ipindia.nic.in/itemap.htm>)
 Contact Us (<http://ipindia.nic.in/contact-us.htm>) Help Line (<http://ipindia.nic.in/helpline-page.htm>)

[Skip to Main Content](#)



(<http://ipindia.nic.in/index.htm>)



(<http://ipindia.nic>)

Patent Search

Invention Title	ARTIFICIAL NEURAL NETWORK BASED DETECTION OF COVID-19 FROM CHEST X-RAY
Publication Number	13/2021
Publication Date	26/03/2021
Publication Type	INA
Application Number	202121012313
Application Filing Date	22/03/2021
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06N0003040000, G06K0009620000, G06N0003080000, G06T0007000000, G06K0009460000

Inventor

Name	Address	Country
Dr. Sushma Jaiswal,CSIT, Guru Ghasidas Central University	Assistant Professor, CSIT, Guru Ghasidas Central University, C.G, Koni, Bilaspur, Chhattisgarh India 495009	India
Dr.N.C.Brintha,Kalasalingam Academy of Research and Education	Associate Professor, Kalasalingam Academy of Research and Education Krishnankoil, Srivilliputhur Tamil Nadu India 626128	India
Dr.V.Ajantha Devi,AP3 Solutions	Research Head AP3 Solutions Chennai Tamil Nadu India 580030	India
Dr. Rajeev Kant,GGSESTC	Associate Professor Department of Mechanical Engg., GGSESTC, Chas, Bokaro, Jharkhand India 827013	India
Dr K Sumathi,Sri Sairam Engineering College	Professor, Department of Electronics and Communication Engineering, Sri Sairam Engineering College Technology Sai Leo Nagar Chennai Tamil Nadu India 600044	India
Dr E Priya,Sri Sairam Engineering College	Professor, Department of Electronics and Communication Engineering, Sri Sairam Engineering College Technology Sai Leo Nagar Chennai Tamil Nadu India 600044	India
T. Jagadesh,KPR Institute of Engineering and Technology	Assistant Professor, Department of ECE, KPR Institute of Engineering and Technology Avinashi - Coimbatore Rd, Arasur, Tamil Nadu India 641407	India
Dr. S. Sugumaran,Vishnu Institute of Technology	Professor, Department of ECE, Vishnu Institute of Technology Vishnupur Bhimavaram Karnataka Andhra Pradesh 534202	India
Ms. Farida Begum. N,Rathinam college of Arts and Science	Assistant professor, Department of MBA, Rathinam college of Arts and Science Rathinam Tech Zone, Eachanari Road, Coimbatore Tamil Nadu India 641021	India
Dr. R. Krishnamoorthy,Sree Sastha Institute of Engineering and Technology	Associate Professor, Sree Sastha Institute of Engineering and Technology Chembarambakkam Chennai Tamil Nadu India 600123	India

Applicant

Name	Address	Country
Dr. Sushma Jaiswal, CSIT, Guru Ghasidas Central University	Assistant Professor, CSIT, Guru Ghasidas Central University, C.G. Koni, Bilaspur, Chhattisgarh India 495009	India
Dr.N.C.Brintha, Kalasalingam Academy of Research and Education	Associate Professor, Kalasalingam Academy of Research and Education Krishnankoil, Srivilliputhur Tamil Nadu India 626128	India
Dr.V.Ajantha Devi, AP3 Solutions	Research Head AP3 Solutions Chennai Tamil Nadu India 580030	India
Dr. Rajeev Kant, GGSESTC	Associate Professor Department of Mechanical Engg., GGSESTC, Chas, Bokaro, Jharkhand India 827013	India
Dr K Sumathi, Sri Sairam Engineering College	Professor, Department of Electronics and Communication Engineering, Sri Sairam Engineering College Technology Sai Leo Nagar Chennai Tamil Nadu India 600044	India
Dr E Priya, Sri Sairam Engineering College	Professor, Department of Electronics and Communication Engineering, Sri Sairam Engineering College Technology Sai Leo Nagar Chennai Tamil Nadu India 600044	India
T. Jagadesh, KPR Institute of Engineering and Technology	Assistant Professor, Department of ECE, KPR Institute of Engineering and Technology Avinashi - Coimbatore Rd, Arasur, Tamil Nadu India 641407	India
Dr. S. Sugumar, Vishnu Institute of Technology	Professor, Department of ECE, Vishnu Institute of Technology Vishnupur Bhimavaram Karnataka Andhra Pradesh 534202	India
Ms. Farida Begum. N, Rathinam college of Arts and Science	Assistant professor, Department of MBA, Rathinam college of Arts and Science Rathinam Tech Zone, Eachanari Road, Coimbatore Tamil Nadu India 641021	India
Dr. R. Krishnamoorthy, Sree Sastha Institute of Engineering and Technology	Associate Professor, Sree Sastha Institute of Engineering and Technology Chembarambakkam Chennai Tamil Nadu India 600123	India

Abstract:

In recent years, multi fold improvement is viewed in the field of Artificial Intelligence hence plays a significant role in image classification especially classification of m images. In specific Convolutional Neural Networks (CNN) belonging to Artificial Intelligence performs well in detection of several diseases such as heart disease, Dent Malaria and Parkinson's disease. CNN has significant vision in detection of lung disease utilizing the medical images of the patient such as X-rays. Lung disease is the symptom of the global pandemic disease COVID-19. This invention proposes a CNN model for the detection of lung disease where the model involves four layers namely convolutional layers, fully connected layers and output layers. The three layered two dimensional convolutional layers involves ReLu activation function along pooling making the detection process easier by training the model using dataset. The proposed CNN model provides 97.4% of accuracy and 94.5% of precision. F1 score model is achieved as 97.60 and the curve area of Receiver Operating Characteristic (ROC) is obtained as 0.975.

Complete Specification

- Claims: 1. The proposed invention involves a sequential model of CNN for detection of COVID to avoid overfitting even though there is limited data set.
2. The CNN model involves mainly four components namely input layers, convolutional layers, fully connected layers and output layer which are connected sequentially.
3. A set of layers-4 convolutional layers are involved where the first layer is a two dimensional convolutional layer with a Rectified Linear Unit activation function with a 3x3 kernel.
4. The activation function is computationally efficient as it does not activate all the neurons of the AI system at the same time comparative to other activation functions of deep learning such as tanh.
5. A Max pooling layer of 2x2 dimensions is added in each of three layers for making the model computationally efficient.
6. The proposed CNN model provides 97.4% of accuracy and 94.5% of precision. F1 score of the model is achieved as 97.60 and the curve area of Receiver Operating Characteristic (ROC) is obtained as 0.975.
- , Description:
- In deep learning of Artificial Intelligence, Rectified Linear Unit is the most popular activation function which is effectively utilized for images.
 - This activation function is computationally efficient as it does not activate all the neurons of the AI system at the same time comparative to other activation functions of deep learning such as tanh.
 - The other three layers are two dimensional convolutional layers included along with Rectified Linear unit activation function and Max pooling.
 - Accumulation of all the features is done by Max pooling of the convolutional layers by the process of convolving over the features.
 - Computational cost is reduced by minimizing number of parameters thereby avoiding overfitting. A Max pooling layer of 2x2 dimensions is added in each of the

[View Application Status](#)



Terms & conditions (<http://ipindia.gov.in/terms-conditions.htm>) Privacy Policy (<http://ipindia.gov.in/privacy-policy.htm>)

Copyright (<http://ipindia.gov.in/copyright.htm>) Hyperlinking Policy (<http://ipindia.gov.in/hyperlinking-policy.htm>)

Accessibility (<http://ipindia.gov.in/accessibility.htm>) Archive (<http://ipindia.gov.in/archive.htm>) Contact Us (<http://ipindia.gov.in/contact-us.htm>)

Help (<http://ipindia.gov.in/help.htm>)

Content Owned, updated and maintained by Intellectual Property India, All Rights Reserved.

Page last updated on: 26/06/2019



(<https://rashtragaan.in/>)