

पेटेंट कार्यालय  
शासकीय जर्नल

**OFFICIAL JOURNAL  
OF  
THE PATENT OFFICE**

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निर्गमन सं. 09/2021  
ISSUE NO. 09/2021

शुक्रवार  
**FRIDAY**

दिनांक: 26/02/2021  
DATE: 26/02/2021

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पेटेंट कार्यालय का एक प्रकाशन  
PUBLICATION OF THE PATENT OFFICE

## **INTRODUCTION**

In view of the recent amendment made in the Patents Act, 1970 by the Patents (Amendment) Act, 2005 effective from 01<sup>st</sup> January 2005, the Official Journal of The Patent Office is required to be published under the Statute. This Journal is being published on weekly basis on every Friday covering the various proceedings on Patents as required according to the provision of Section 145 of the Patents Act 1970. All the enquiries on this Official Journal and other information as required by the public should be addressed to the Controller General of Patents, Designs & Trade Marks. Suggestions and comments are requested from all quarters so that the content can be enriched.

**( Shri Rajendra Ratnoo )**  
**CONTROLLER GENERAL OF PATENTS, DESIGNS & TRADE MARKS**

**26<sup>th</sup> FEBRUARY, 2021**

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(54) Title of the invention : ARTIFICIAL INTELLIGENCE BASED SMART DETECTION OF LUNG DISEASE FROM CHEST X-RAY

<p>(51) International classification :G06N0003040000, G06K0009620000, G06N0003080000, G06T0007000000, G06K0009460000</p> <p>(31) Priority Document No :NA (32) Priority Date :NA (33) Name of priority country :NA (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant :</p> <p><b>1)Dr. M. Akiful Haque,Anurag University</b> Address of Applicant :School Of Pharmacy, Anurag University, Venkatapur, Medchal Dist, Hyderabad Telangana India 500088 Telangana India</p> <p><b>2)Jitendra Debata,Guru Nanak Institutions Of Technical Campus</b></p> <p><b>3)Sanjay Kumar,Gautam College of Pharmacy</b></p> <p><b>4)Poonam Talwan,Himachal Institute of Pharmaceutical Education and Research</b></p> <p><b>5)Darsh Gautam,Himachal Institute of Pharmaceutical Education and Research</b></p> <p><b>6)Anjana Devi,School of Pharmacy Career Point University</b></p> <p><b>7)Dr. Vinay Pandit,Laureate Institute of Pharmacy</b></p> <p><b>8)Prof. C P S Verma,Laureate Institute of Pharmacy</b></p> <p><b>9)Dr M S Ashawat,Laureate Institute of Pharmacy</b></p> <p><b>10)Dr. Hayat M Mukhtar,Sai School of Pharmaceutical Education &amp; Research</b></p> <p><b>11)Dr.Dibyalochan Mohanty,Anurag University</b></p> <p>(72)Name of Inventor :</p> <p><b>1)Dr. M. Akiful Haque,Anurag University</b></p> <p><b>2)Jitendra Debata,Guru Nanak Institutions Of Technical Campus</b></p> <p><b>3)Sanjay Kumar,Gautam College of Pharmacy</b></p> <p><b>4)Poonam Talwan,Himachal Institute of Pharmaceutical Education and Research</b></p> <p><b>5)Darsh Gautam,Himachal Institute of Pharmaceutical Education and Research</b></p> <p><b>6)Anjana Devi,School of Pharmacy Career Point University</b></p> <p><b>7)Dr. Vinay Pandit,Laureate Institute of Pharmacy</b></p> <p><b>8)Prof. C P S Verma,Laureate Institute of Pharmacy</b></p> <p><b>9)Dr M S Ashawat,Laureate Institute of Pharmacy</b></p> <p><b>10)Dr. Hayat M Mukhtar,Sai School of Pharmaceutical Education &amp; Research</b></p> <p><b>11)Dr.Dibyalochan Mohanty,Anurag University</b></p>
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(57) 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 medical images. In specific Convolutional Neural Networks (CNN) belonging to Artificial Intelligence performs well in detection of several diseases such as heart disease, Dental diseases, Malaria and Parkinson<sup>TM</sup>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 basic 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 input layers, convolutional layers, fully connected layers and output layers. The three layered two dimensional convolutional layers involves ReLu activation function along with Max 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 of the model is achieved as 97.60 and the curve area of Receiver Operating Characteristic (ROC) is obtained as 0.975.

No. of Pages : 11 No. of Claims : 6