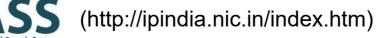Home (http://ipindia.nic.in/index.htm)   About Us (http://ipindia.nic.in/about-us.htm)   Who's Who (http://ipindia.nic.in/whos-who-page.htm)
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Patent Search

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Inventor

Name	Address	Country	Nationality
Madhu Medabalimi,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Chappidi Suryaprakash Reddy,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Y. Pradeep Kumar,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Mopuri Deepa,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Dr.Yerikala Ramesh,Ratnam Institute of Pharmacy	Ratnam Institute of Pharmacy, Pidathapolur(V),Muthukur(M),SPSR Nellore Andhra Pradesh India 524346	India	India
Swagatika Das,Centurion University of Technology and Management	Centurion University of Technology and Management , Ramachandrapur, Jatni, Odisha India 752050	India	India
Dr Ashwani Kumar,Gurukul Kangri (Deemed to be University)	Department of Pharmaceutical Sciences, Gurukul Kangri (Deemed to be University), - Haridwar Uttarakhand India	India	India
Mrs.Poonam Dogra,Career Point University	School of Pharmacy Career Point University Hamirpur Bhoranj(Tikker Kharwarian) Hamirpur Himachal Pradesh India 176041	India	India
Dr. Rajesh Gupta,Sri Sai College of Pharmacy	Sri Sai College of Pharmacy Badhani Pathankot Punjab India 145001	India	India
Mr. Ravi Shankar Kumar,SBS College of Pharmacy	SBS College of Pharmacy Tarn Taran Patti Punjab India 143416	India	India
Mr. Neeraj Bhandari,Sri Sai College of Pharmacy	Sri Sai College of Pharmacy Badhani Pathankot Punjab India 145001	India	India
Ms. Madhu bala,Gautam college of Pharmacy	Gautam college of Pharmacy - Hamirpur Himachal Pradesh India 177001	India	India

Applicant

Name	Address	Country	Nationality
Madhu Medabalimi,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Chappidi Suryaprakash Reddy,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Y. Pradeep Kumar,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Mopuri Deepa,Annamacharya College of Pharmacy	Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh India 516126	India	India
Dr.Yerikala Ramesh,Ratnam Institute of Pharmacy	Ratnam Institute of Pharmacy, Pidathapolur(V),Muthukur(M),SPSR Nellore Andhra Pradesh India 524346	India	India
Swagatika Das,Centurion University of Technology and Management	Centurion University of Technology and Management , Ramachandrapur, Jatni, Odisha India 752050	India	India
Dr Ashwani Kumar,Gurukul Kangri (Deemed to be University)	Department of Pharmaceutical Sciences, Gurukul Kangri (Deemed to be University), - Haridwar Uttarakhand India	India	India
Mrs.Poonam Dogra,Career Point University	School of Pharmacy Career Point University Hamirpur Bhoranj(Tikker Kharwarian) Hamirpur Himachal Pradesh India 176041	India	India
Dr. Rajesh Gupta,Sri Sai College of Pharmacy	Sri Sai College of Pharmacy Badhani Pathankot Punjab India 145001	India	India
Mr. Ravi Shankar Kumar,SBS College of Pharmacy	SBS College of Pharmacy Tarn Taran Patti Punjab India 143416	India	India
Mr. Neeraj Bhandari,Sri Sai College of Pharmacy	Sri Sai College of Pharmacy Badhani Pathankot Punjab India 145001	India	India
Ms. Madhu bala,Gautam college of Pharmacy	Gautam college of Pharmacy - Hamirpur Himachal Pradesh India 177001	India	India

Abstract:

Acute Kidney Injury in patients increase long term adverse events such as morbidity finally mortality hence early detection of acute kidney injury is necessary for improved functioning of renal organ with decreased comorbidities thereby increasing rate of survival of patients. Kidney injury can be controlled by reducing the risk factors such as interaction between drug – drug and disease-drug interaction. Complexities raises due to drug-drug interaction and disease-drug cannot be handled by typical statistical approaches. In this invention, novel deep learning algorithm is proposed for discovering rules from tree models of multilayer based on drug usage combinations which detects indications of disease based on drug interaction. It is found that usage of drugs for several diseases have significant impact leading to occurrence of kidney injury. The proposed Deep learning tree based model performs better with higher prediction accuracy and interpretability than conventional tree based model.

Complete Specification

Claims:1.   In this invention, novel deep learning algorithm is proposed for discovering rules from tree models of multilayer based on drug usage.
2.   The deep random forest autonomously detects the level of injury based on the granularity of the image which is further featured into various levels.
3.   The data about the kidney injury is mapped based on the representations of rules in a layer wise fashion using modified random forests.
4.   More granularities indicate severity of the kidney injury, small granules indicate kidney injury is less and can be cured by proper treatment.
5.   Even complicated cases can be detected based on the depth of the decision trees considered for model capacity during rule mapping of the algorithm.
6.   In the adaptive training process, mutually exclusive regions are generated in the first layer of the each tree.

, Description:•   In this invention, the detection process of kidney injury involves analyzing and learning of distributed region layer wise in the data represented.
•   In the adaptive training process, mutually exclusive regions are generated in the first layer of the each tree. Followed by this each tree in the successive layer performs splitting of the data regions based on their granularity.
•   Deep analysis is done based on the presence of granularity. Coarse granules in the data set more in quantity indicate severe kidney injury.
•   Fine granules indicate that the injury is less and can be treated.
•   In the random forest, the number of trees in each layer is set to 100. Multi layer perceptron is formed with 16 neurons in the first layer and 8 neurons in the second layer as there is possibility of imbalanced classes.
•   Adverse drug reaction leading to kidney injury is identified using this algorithm which is able to perform better than existing black box algorithms.

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