Bharath
INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Declared as Deemed-to-be University under section 3 of UGC Act, 1956)
(Vide Notification No. F.9-5/2000 - U.3, Ministry of Human Resource Development, Govt. of India, dated 4th July 2002)
Accredited by NAAC
NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL
Phone : 044-22290742 / 22290125 . Telefax : 044-22293886
Website : www.bharathuniv.ac.in
173, Agaram Road, Selaiyur, Tambaram,
Chennai - 600 073. Tamil Nadu.

Ref No.SMS-2018-O-17 Date: 22/07/2019

BHARATH INSTITUTE OF HIGHER EDUCATION & RESEARCH (Declared as Deemed to be University U/S 3 of UGC Act.1956) 22 JUL 2019 OFFICE OF THE DEAN-RESEARCH Selaiyur, Chennai-600 073. INDIA

TO

Mr. G.Ayyappan,

Asst. Professor/CSE,

BIHER.

Thro: Concern Head of the Department

Greetings!!!

We are happy to announce that the Research Advisory Committee has approved your proposal for Seed Money Scheme-2018 which was presented by you. You are requested to complete the proposal and send the progress report to the Dean Research in the prescribed time period.

Title of the Project: Machine Learning Approaches of Awareness among Patients on ADR Reporting System in Chennai

Seed Money Amount: Rs.1, 00,000/- (Rupees One Lakh Only)

Approved on: 17/07/2019

Payment details:

Cheque No.375320 **Dated: 17/07/2019**

Bank Name: Indian Bank, Selaiyur, Chennai.

With Regards

Dean-Research

इंडियन बैंक
Indian Bank

सेलैयूर (तांबरम) शाखा, चेन्नई – 600 073
SELAIYUR (TAMBARAM) BRANCH, CHENNAI - 600 073
IFS Code: IDIB000S246

"VALID FOR THREE MONTHS ONLY"

1	7	0	7	2	0	1	9
D	D	M	M	Y	Y	Y	Y

या धारक को OR BEARER

Mr. G: Ayyappan

रुपये One Lakh Only अदा करें ₹ 1,00,000/-

CA 6670628110

HM.CIA
CBS Code: 02505

BLE AT PAR AT ALL OUR BRANCHES"

Please sign above

⑈375319⑈ 600019250⑆ 29

PROPOSAL SUBMISSION

1. **Details of Principal Investigator**

Name	: Dr.G.Ayyappan
Designation	: Associate Professor
Highest Qualifications	: Ph.D
Department	: Computer Science & Engineering
E-mail	: ayyappan.it@bharathuniv.ac.in
Contact no	: 9790084674
Date of Joining	: 02.09.2009

2. **Details of Co - Principal Investigator**

Name	: Dr.A.Kumaravel
Designation	: Professor
Highest Qualifications	: Ph.D.
Department	: Information Technology
E-mail	: drkumaravel@gmail.com
Contact no	: 8753133278
Date of Joining	: 13-8-2006

Technical details

1. Introduction

Patient's adverse drug reacting reporting is a brand new idea in Pharmacovigilance which make contributions to the enrichment of current drug protection performs. In this research work focuses on implementation of machine learning techniques for patient awareness on opposing drug reaction reporting system in Chennai. The current study was a cross-sectional study which was showed for a period of one year amongst patients hospitalized at Chennai. Sample size taken was 1000 and the sample size was collected by google forms. Data was collected using a standardized questionnaire. Data entered in MS Excel and analysed using Weka 3.8.3 and results interpreted. The Naïve Bayes classifier has 93.21% accuracy level and it has take time to build the model 0.01 seconds. The SMO(Support Vector Machine) has produced the 96.75% accuracy and it has take time to build the model 0.51 seconds. The IBK machine learning algorithm has 95.28% accuracy and it has take time to build the model 0.00 second. The remaining machine learning algorithms namely Classification Via Regression, Decision Table and J48 classifiers have same accuracy level like 97.34%. But the Classification Via Regression has taken the time to shape the model 1.02 seconds, Decision Table has taken the time to shape the model 0.23 seconds, J48 classifier has taken the time to build the model 0.09 seconds. The review of consciousness between patients designates low consciousness and it could be upgraded by presenting educational interventional programs.

2. Review of status of Research and Development in the subject

Pharmacovigilance is the science and activities relating to the detection, monitoring, assessment, understanding and prevention of adverse effects or any other drug-related problem from any pharmaceutical products. Medicines have, beyond any doubt, proved to be a boon for humanity and it fights against disease and suffering. However, like most other useful things, medicines come with inherent risks associated with their use, called Adverse Drug Reactions (ADRs). These reactions, though mild in most cases, have the potential to cause disability and even death.

ADRs are often referred to as "any noxious and unintended effects of a drug that occurs at doses normally used in human beings for the prophylaxis, diagnosis or therapy of disease, or for modification of physiological function1

International Status: They account for approximately 4.2% to 6.0% of all hospital admissions and they occur in about 10%-20% of all hospitalized patients. The process of identifying and preventing ADRs associated with postmarketed drugs i.e. Pharmacovigilance is becoming increasingly important due to the potential harmful effects of drugs on patient's health, economic burden associated with ADRs and circulation of large numberof over-the-counter and counterfeit drugs in the market.

National Status: Pharmacovigilance is the science and activities relating to the detection, monitoring, assessment, understanding and prevention of adverse effects or any other drug-related problem from any pharmaceutical products. Medicines have, beyond any doubt, proved to be a boon for humanity and it fights against disease and suffering. However, like most other useful things, medicines come with inherent risks associated with their use, called Adverse Drug Reactions (ADRs). These reactions, though mild in most cases, have the potential to cause disability and even death. ADRs are often referred to as "any noxious and unintended effects of a drug that occurs at doses normally used in human beings for the prophylaxis, diagnosis or therapy of disease, or for modification of physiological function1

3. Progress/achievement so far,

a) Reference papers was collected.
b) Literature survey was studied.
c) Proposal work has been started in the wind turbine based PMSG fed three phase inverter for grid connected system.

4. Work Plan:

The current study was a cross-sectional study which was showed for a dated of one year between patients hospitalized at Chennai region hospital. Sample size taken was 358 and the sample size was arrived by google forms. Data was collected using a standardized questionnaire. Data entered in MS Excel and analyzed using Weka 3.8.3 and results interpreted.

4.1 Methodology:

The below machine learning algorithms have applied in this study for classification approaches of this dataset.

NaiveBayes

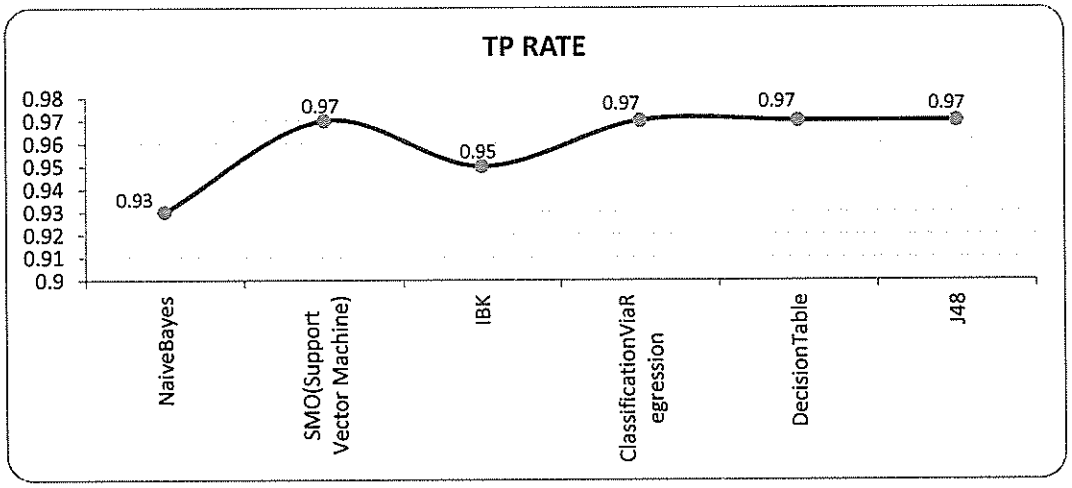
SMO(Support Vector Machine)

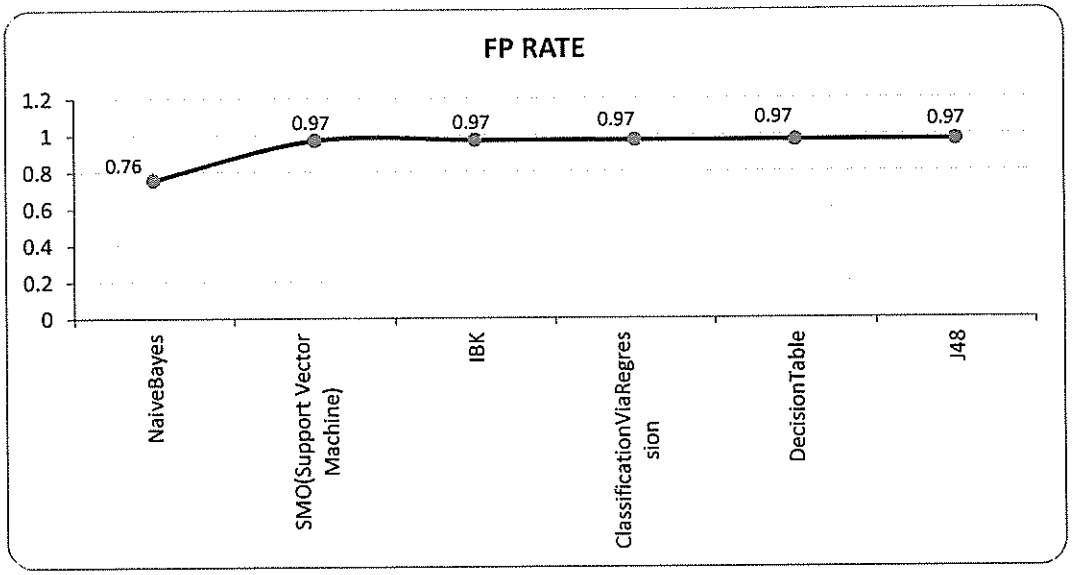
IBK

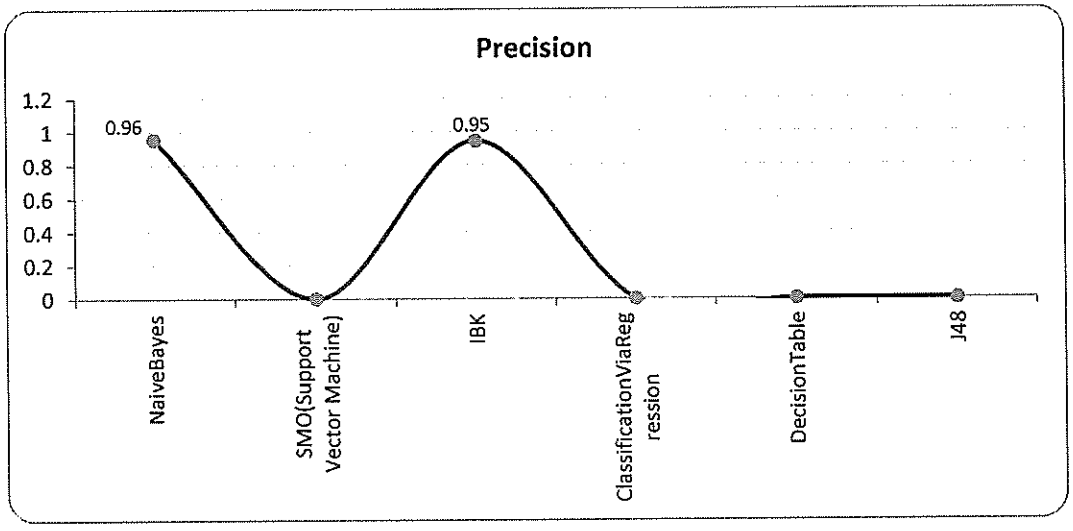
ClassificationViaRegression

DecisionTable

J48



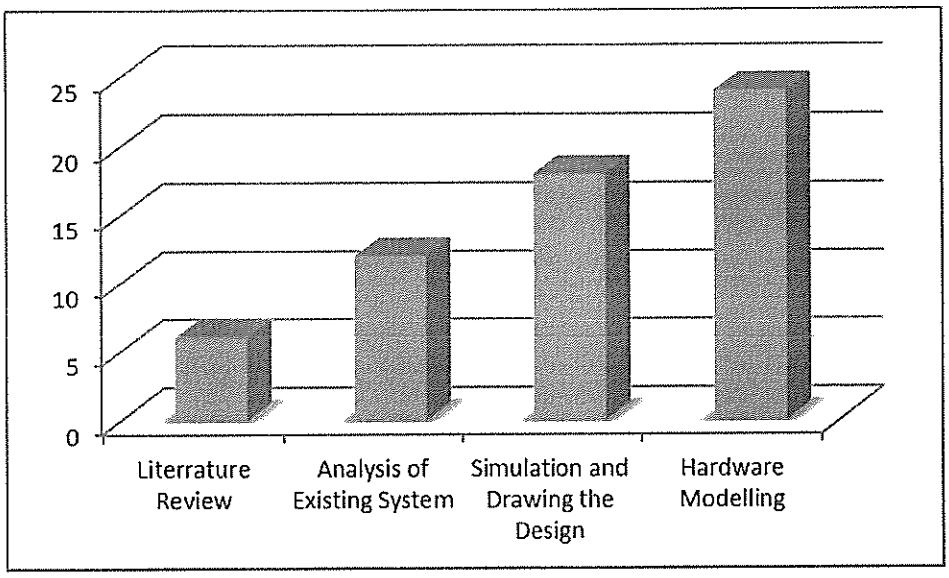




4.2 Time Schedule of activities giving milestones through BAR diagram.

Work plan (including detailed methodology and time schedule)

Sl. No.	Activity / Milestone	1st Year		2nd Year	
1.	Literature review	1-6			
2.	Analysis of existing system		7-12		
3.	Simulation and Drawing the design			13-18	
4.	Hardware modelling				19-24



4.3. Expected outcome within the time period of Seed Money Scheme

a. Analysis of existing system and Simulation and Drawing the design done by seed money scheme.

5. Suggested Plan of action stating the name of funding agency where the project will be communicated for financial support within the time period of project.

Nil

6. Bibliography:

1. Ritu Pahuja, Birendra Shrivastava,Pankaj Kumar Sharma,Kamal Kishore,Sandeep Mahajan and Radhika Sood, Awareness on Adverse Drug Reaction Reporting System in India: A consumer Survey. American Journal of Phytomedicine and Clinical Therapeutics. (AJPCT), Vol 2,Issue 12,2014, Page 1361-1369.

2. Muehlberger N, Schneeweiss S, Hasford J. Adverse drug reaction monitoring-cost and benefit considerations. Part I: frequency of adverse drug reactions causing hospital admissions. Pharmacoepidemiology & drug safety 1997; 6 (S3): 71-77.

3. Classen DC, Pestotnik SL, Evans RS, Lloyd JF, Burke JP. Adverse drug events in hospitalized patients-excess length of stay, extra costs and attributable mortality. Journal of the American Medical Association 1997; 277: 301-6.

4. Moore TJ, Psaty BM, Furberg CD. Time to act on drug safety. Journal of the American Medical Association, 1998; 279:1571-1573.

5. Blenkinsopp A, Wilkie P, Wang M, Routledge P.A. Patient reporting of suspected adverse drug reactions: a review of published literature and international experience. British Journal of Clinical Pharmacology. Feb 2007; 63 (2): 148-156.

6. Avery AJ, Anderson C, Bond CM, Fortnum H, Gifford A, Hannaford PC et al. Evaluation of patient reporting of adverse drug reactions to the UK 'Yellow Card Scheme': literature review, descriptive and qualitative analyses, and questionnaire surveys. Health Technology Assess 2011 May; 15(20):1-234.

7. Ahmed AM, Izham IM, Subish P. The Importance of the Consumer Pharmacovigilance System in Developing Countries: A Case of Malaysia. Journal of Clinical and Diagnostic Research 2010 Aug; 4:2929-2935.

8. Margraff F, Bertram D. Adverse drug reaction reporting by patients: an overview of fifty countries. Drug Safety 2014. Jun; 37 (6): 409- 19.

9. Herxheimer A, Crombag MR, Alves C TL. Direct patient reporting of adverse drug reactions. A twelve-country survey and literature review. Briefing Paper Health Action International. January 2010.

10. Langen J, van Hunsel, Passier, van den Berg L, van Grootheest K. Adverse Drug ReactionsReporting by Patients in the Netherlands. Drug Safety 2008; 31:515-24.

11. Hazell L, Shakir SA. Under-reporting of adverse drug reactions: a systemic review. Drug Safety, 2006; 29:385-396.

12. National Statistics Opinions (Omnibus) Survey. User guide. URL: www.statistics. gov.uk/about/services/omnibus/downloads/User_Guide.pdf (accessed 8 October 2014).

13. Amrita P, Kharbanda B. Knowledge, attitude and skills of nurses of Delhi towards adverse drug reaction reporting. Indian J Pharm Pract 2012; 5: 45-51.

14. Jha N, Rathore DS, Shankar PR, Gyawali S. Pharmacovigilance Knowledge among Patients at a Teaching Hospital in Lalitpur District, Nepal. Journal of Clinical Diagnostic Research. 2014 March: 8(3): 32-4.

7. **List of Projects submitted/implemented by the Investigators (Separate for Pi and Co-PI)**

Nil

7.1 Details of Projects submitted to various funding agencies:

Sl. No.	Title	Cost in lakhs	Month of submission	Role as PI/ Co-PI	Agency	Status
	NA	NA	NA	NA	NA	NA

7.2 Details of Projects under implementation

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
	NA NA	NA	NA	NA	NA

7.3 Details of Projects completed during the last 5 years

Sl. No.	Title	Cost in lakhs	Duration	Role as PI/ Co-PI	Agency
	NA	NA NA	NA	NA	NA

8. **List of publications published by the Investigators, if any:**

a) Principal Investigator & Co - Principal Investigator

S.No	Author	Title	Volume no	Issue no	year	Page no	Publisher
1	Ayyappan, G., Nalini, C., Kumaravel, A.	Various approaches of knowledge transfer in academic social network	8	4	2017	23780-23787	International journal of Pharmacy and Technology (IJPT)

2	Ayyappan, G., Nalini, C., Kumaravel, A.	Construction of META classifiers for academic research data from social networks	8	3	2017	432-440	International Journal of Civil Engineering and Technology (IJCIET),
3	Ayyappan, G., Nalini, C., Kumaravel, A.	Efficient mining for social networks using information gain ratio based on academic dataset	8	1	2017	936-942	International Journal of Civil Engineering and Technology (IJCIET),
4	Ayyappan, G., Nalini, C., Kumaravel, A.	A novel K-NN classification approach using topic modelling in aminer dataset,	10	2	2019	40-44	Indian Journal of Computer Science and Engineering
5	Ayyappan, G., Nalini, C., Kumaravel, A.	A case study on a miner dataset: Identifying leading research through various models,	10	2	2019	45-53	Indian Journal of Computer Science and Engineering
6	Ayyappan, G., Nalini, C., Kumaravel, A.	Novel Ensemble Approaches To Model Macroscopic Material Behavior Using Micromechanical Simulations	8	11	2019	2560-2564	International Journal of Scientific & Technology research (IJSTR)
7	Ayyappan, G., Nalini, C., Kumaravel, A.	Knowledge Structure for Fraudulent Firm Classification Approaches	10	4	2019	74-82	Indian Journal of Computer Science and Engineering (IJCSE),
8	Ayyappan, G., Nalini, C., Kumaravel, A.	Food Classifications in Travel Review Dataset	10	4	2019	74-82	Indian Journal of Computer Science and Engineering (IJCSE),
9	Ayyappan, G., Nalini, C., Kumaravel, A.	Hotel Classifications in Travel Review Dataset	10	4	2019	74-82	Indian Journal of Computer Science and Engineering (IJCSE),
10	Ayyappan, G., Nalini,	Comparisons of Various	10	3	2019	74-82	Indian Journal of Computer Science and

	C., Kumaravel	Measurements in Wi-Fi Signal Strength by Tuning of Parameters Using SVM					Engineering (IJCSE),
11	Ayyappan, G., Nalini, C., Kumaravel	A Novel Classification Approach of Travel Review Dataset Based On Entertainment	10	3	2019	54-57	Indian Journal of Computer Science and Engineering (IJCSE),
12	Ayyappan, G., Nalini, C., Kumaravel	A Case Study on A Miner Dataset: Identifying leading research through various Models	10	3	2019	45-53	Indian Journal of Computer Science and Engineering (IJCSE),
13	Ayyappan, G., Nalini, C., Kumaravel	Ensemble Classifications for Student Academics Performance Data Seta	10	1	2019	31-34	Indian Journal of Computer Science and Engineering (IJCSE),
14	Ayyappan, G., Nalini, C., Kumaravel	SMO classification for cervical cancer dataset by applying various kernels	10	1	2019	26-27	Indian Journal of Computer Science and Engineering (IJCSE),
15	Ayyappan, G., Nalini, C., Kumaravel	. A study on SNA: Text Mining using Academic Social Networks	8	6	2017	2787-2790	International journal of Engierring and Technology

9 **Budget**

Sl. No.	Equipment	Quantity	Amount in INR
1	Dell Desktop Computer	As per requirement	50,000
2	Consumables (Like, testing tools Charge controller, etc.)	As per requirement	20,000
3	Travel support for the purpose of research work.	---	10,000
4	Contingency	---	10,000
5	Others	---	10,000
	Total		1,00,000

10.Name of at least two subject experts from the Institute and one from the outside Institute with their contact details:

a) Dr.S.Prakash – Professor, Dept of EEE, BIHER, Chennai-600073.

b) Dr.A.Suresh – Professor, Dept of EEE, S.A, Engineering College, Chennai.

CERTIFICATE FROM THE INVESTIGATOR

Project Title: **MACHINE LEARNING APPROACHES OF AWARENESS AMONG PATIENTS ON ADR REPORTING SYSTEM IN CHENNAI**

It is certified that

1. I do hereby agree to submit a complete proposal for financial support to the external funding agency within the time period of SMS-2018
2. I undertake that spare time on equipment procured in the project will be made available to other users.
3. I agree to submit a certificate from Institutional Biosafety Committee, if the project involves the utilization of genetically engineered organisms. I also declare that while conducting experiments, the Biosafety Guidelines of Department of Biotechnology, Department of Health Research, GOI would be followed in to.
4. I agree to submit ethical clearance certificate from the concerned ethical committee, if the project involves field trails/experiments/exchange of specimens, human & animal materials etc.
5. I agree to abide by the terms and conditions of SMS-2018, BIHER, and Chennai.

Name and signature of
Principal Investigator

Name and signature of
Co-Principal Investigator

Date: 03.6.2019
Place: Chennai - 73

Forwarded by Head of the Department

Signature of the Head

PROJECT EVALUATION FORMAT

Recommendation Sheet

Name of the Principal Investigator	Dr.G.Ayyappan
Name of the Co-Investigator	Dr.A.Kumaravel
Name of the Department	Information Technology
Title of project	**MACHINE LEARNING APPROACHES OF AWARENESS AMONG PATIENTS ON ADR REPORTING SYSTEM IN CHENNAI**
Recommendation of the evaluation committee	Recommended
Financial allocation recommended	Rs. 1,00,000/- (One lakh only)

Sl. No.	Equipment	Quantity	Amount in INR
1	Dell Desktop Computer	As per requirement	50,000
2	Consumables (Like, testing tools Charge controller, etc.)	As per requirement	20,000
3	Travel support for the purpose of research work.	---	10,000
4	Contingency	---	10,000
5	Others	---	10,000
	Total		1,00,000

Name and Signature of the Research Advisory Committee members with date

Dr. P. Naveenchandran

BIHER * Internal Quality Assurance Cell * IQAC Selaiyur Chennai-73.