

[Type text]

**Resume of KulshresthaManjusha**

[Type text]

*PERSONAL PARTICULARS*

Full Name (with qualifications in brief): **ManjushaKulshrestha** (Ph D Applied Mathematics)

Date of Birth: **26<sup>th</sup> September 1962**

Nationality: **Indian**

E-Mail: [kush1220003@yahoo.co.in](mailto:kush1220003@yahoo.co.in)

Telephone  
[Home]: **8511185971**

Present Post: **Professor and Head**

[Type text]

## Resume of KulshresthaManjusha

[Type text]

ACADEMIC RECORD with dates

Universities or Higher  
Education Institutions Attended:

**25<sup>th</sup> May 2007**

**Ph D**

Applied Mathematics.

Thesis title: *"PREDICTION OF WEATHER PARAMETERS USING HARMONIC ANALYSIS AND ARTIFICIAL NEURAL NETWORKS."*

Maharaja Sayajirao University of Baroda, Vadodara. Gujarat, India.

**June 1984**

**M. Sc. (First Class with Distinction; 72%)**

Pure Mathematics

Sardar Patel University, Vallabhvidya Nagar. Gujarat, India.

(Received **National Merit Scholarship**)

**June 1982**

B. Sc.(First Class , 65% )

Mathematics

Saurashtra University, Rajkot. Gujarat, India.

Received

i) **College Merit scholarship**

ii) **Free ship** as National Cadet Corps Candidate

EMPLOYMENT RECORD –*CURRENT POST*: Professor & Head (since 15/02/2019)

*Institution:* Anand Agricultural University, Anand, Gujarat, India.

*Faculty/School/Department:* Department of Basic Sciences and Humanities,  
B A College of Agriculture.

*Duties:*

*Teaching:*

To teach Applied Maths, Engineering Mathematics, Advanced Calculus, Differential Equations and Biomathematics to Polytechnic, Under Graduate and Post Graduate students of Agriculture faculty, Agricultural Information Technology. It covers the topics ; Fourier Series, Harmonic analysis ,Vector Analysis, Matrices & Determinant, Probability & Distribution, Markov chain Model for prediction of Wet and Dry days with conditional probabilities, Hands on MATLAB(MatrixLaboratory)

[Type text]

### **Resume of KulshresthaManjusha**

[Type text]

Research :

To do departmental research work applying different mathematical/statistical models in the field of agriculture and to present the results in research meeting of the university.

Departmental Research work:

- 1) Prediction of monthly rainfall using Double Fourier series and Artificial Neural Networks.
- 2) Predicted the Rice yield of Middle Gujarat using regression models
- 3) Study of exposure, perception and advantages realized about weather based agro-advisory services by selected farmers of Anand district.
- 4) Prediction of hourly air temperatures by Harmonic analysis of Anand station in progress.

Extension:

To act as convener of 'ON CAMPUS TRAINING' of Student READY (Rural entrepreneurship Awareness Development Yojana) programme.

[Type text]

## **Resume of KulshresthaManjusha**

[Type text]

Current Position of  
Responsibility :

Head of the Department.

1) To administrate the department which consists of four faculties (Three Assistant Professor and one Professor) of Maths, Physics and English including supervisions on teaching, research and extension assigned duties.

2) Monitoring on Five numbers of collaborative projects with Indian Space Research organisation (ISRO), Ahmedabad.

3) To utilize the allotted grant for the department as per rule of Gujarat Government.

4) To purchase scientific instruments for student and research purpose.

Previous Posts and Responsibilities in this Institution:

**i) 1<sup>st</sup> February 2017 to  
14/2/2019**

Professor & Head  
Department of Agricultural Meteorology,  
Maths, Physics and Agril. Engineering,  
B A College of Agriculture. Anand Agricultural University,  
Anand, Gujarat, India

Duties:

Teaching:

To teach Applied Mathematics at Undergraduate and post Graduate level Viz. Differential Equations, Calculus, Mathematical Analysis, Bio- Mathematics etc. To develop Mathematical/ Statistical Model for prediction of crop yield / Weather parameters in Meteorology / Agricultural Meteorology using Microsoft excel, MATLAB , SAS etc.

[Type text]

## **Resume of Kulshrestha Manjusha**

[Type text]

Research:

The departmental Research work:

- ❖ Developed the Mathematical/ Statistical Model for prediction of crop yield/ Weather parameters in Meteorology Agricultural Meteorology using Microsoft excel, MATLAB(Matrix Laboratory) , SAS(Statistical Analysis System)etc.
- ❖ Principal Investigator of the two Government projects (schemes): i) Center for Weather Forecasting and Climate Change & ii) Application of Remote Sensing in Agriculture.
- ❖ Principal Nodal officer & Investigator of the India Meteorological Department (IMD) funded projects ‘ Gramin Krushi Mausam Sewa.(GKMS)’ and ‘ Forecasting Agricultural output using Space Agro Meteorology Land based observations (FASAL).’Respectively.
- ❖ Sixteen numbers of Agro-meteorological observatories of different research stations under Anand Agricultural University jurisdictions were strengthened by installation of instruments to measure the different meteorological parameters.

Administration

- ❖ Department of Agricultural Meteorology was strengthened.
- ❖ Monitored ten number of different projects of the department.
- ❖ Maintenance of one Meteorological Observatory and two laboratories of Agricultural Meteorology & Agril. Engineering respectively.
- ❖ Expended the Government grant for utilization of the teaching , Research & extension activities of the department.
- ❖ One ‘CLIMATE CHANGE’ museum in the department was established for student and visitor’s knowledge.

**25<sup>th</sup> May 2010 to 31/1/2017**

Teaching, Research & extension

Professor  
Department of Agricultural Meteorology, Maths,  
Anand Agricultural University, Anand, Gujarat,  
India

[Type text]

**Resume of Kulshrestha Manjusha**

[Type text]

**25<sup>th</sup> May 2007 to 24<sup>th</sup> May 2010**

Associate Professor (Maths),  
Department of Agricultural Meteorology,  
Anand Agricultural University, Anand, Gujrat, India

Teaching, Research & extension

**21<sup>st</sup> April 1989 to 24<sup>th</sup> May 2007**

Assistant Professor (Maths)  
Department of Agricultural Meteorology,  
Anand Agricultural University, Anand, Gujrat, India

Teaching, Research & extension

Extension Work: **From 1<sup>st</sup> Sep 1997 to July 2006 & 27<sup>th</sup> May 2007 to September 2007,**

Assistant Rector of the Hostel of Under Graduate Girls of Agriculture Faculty  
Join with Field Training , Rural Agricultural Work Experience (RAWE)  
Programme and Educational Tour of Final Year B Sc (Agriculture) students.

**PREVIOUS EMPLOYMENT**

In Higher Education:

Positions held	Name of Institution	Date (From – To)
1) Lecturer in Mathematics	Bahauddin Science College, Junagadh. Sauratsra University, Gujarat.India	<b>23<sup>th</sup> Nov 1984</b> <b>to</b> <b>15<sup>th</sup> April 1987</b>
Duties:	Teaching	To teach mathematics at undergraduate level. Viz. Differential Equations, Calculus, Mathematical Analysis, Bio- Mathematics.
2) Lecturer in Mathematics	R RLalanCollege ,Sauratsra University Bhuj, Gujarat.	<b>02<sup>nd</sup> Dec 1987 to 05<sup>th</sup> April 1989</b>
Duties	Teaching	To teach mathematics at Undergraduate level. Viz. Differential equations, Calculus, Mathematical Analysis, Abstract Algebra.
3) Lecturer in Mathematics	H& H B Kotak Science College, Rajkot, Sauratsra University Gujarat, India	<b>08<sup>th</sup> –20<sup>th</sup> April 1989</b>
Duties	Teaching	To teach mathematics at Undergraduate level.

TEACHING AND SUPERVISION**U G Level**

- |                                    |                            |                                |
|------------------------------------|----------------------------|--------------------------------|
| (i) Elementary Mathematics         | (ii) Ordinary Differential | (iii) Biomathematics           |
| (iv) Linear Differential equations | (v) Calculus               | (vi) Vector Algebra            |
| (vii) Advanced Calculus            | (viii) Numerical Methods   | (ix) . Engineering Mathematics |
| (x) Higher Engineering Mathematics |                            |                                |

**Post Graduate level:**

- |  |                                |  |
|--|--------------------------------|--|
| (i) Advanced Mathematics _I                  | (ii) Advanced Mathematics _II  | (iii) Mathematical Concepts in Meteorology-I |
| (iv) Mathematical Concepts in Meteorology-II | (v) Matrices and Determinants. | (vi) Mathematics for Biology and Agriculture |

RESEARCH AND PUBLICATIONS

## Research overview:

- ❖ Developed the William & Logan model for Anand, Double Fourier Series and ANN was also applied and results were compared to Calculate the Hourly Air temperatures from the Max-Min Air temperatures.
- ❖ Used Fourier series for one variable and two variables and new technique ARTIFICIAL NEURAL NETWORK to Predict the Soil temperatures and Annual & monthly rainfall.
- ❖ Applied Harmonic Analysis for counting Variability in the soil data at different depths.
- ❖ Used Incomplete Gamma distribution and ANN to Rainfall probability Analysis and Predicted weekly rainfall with probability.
- ❖ Did the Extreme Value Rainfall Probability analysis of Krishna-Godavari river basin & 58 stations of Gujarat state of India (Agriculture Zone wise). Here Artificial Neural Network (ANN) was also used.

[Type text]

### Resume of KulshresthaManjusha

[Type text]

- ❖ Applied Principal Component Analysis to see the effect of Weather Parameters on Yield of Indian GooseBerry (AONLA). Yield is predicted using Artificial Neural Networks.
- ❖ Principal Investigator in the collaborative project Space Application Centre- Anand Agricultural University, Anand on “Modelling for estimation of Incident Photosynthetically Active Radiation (IPAR) using INSAT 3D data”
- ❖ Prediction of monthly rainfall of Anand station by Double Fourier Series and Principal Component analysis - Artificial NeuralNetwork.
- ❖ Rainfall prediction by Astro-meteorology for Gujaratstate.
  
- ❖ Recommendation text proposed for Scientific community through Anand Agricultural University, Anand.

It is recommended to adopt Double Fourier Series for two inputs & one out put as well as one hidden layer Artificial Neural Network for Seasonal Monthly rainfall prediction from *June to September* using with *Ten* number of hidden neurons, training function: Levenberg-Marquardt Back Propagation.

- ❖ Frequency analysis was done for Rainfall for middle Gujarat.
- ❖ Study of exposure, perception and advantages realized about weatherbased agro-advisory services by selected farmers of Anand district.



Recent Research Work Presentations:

1) Accepted a research paper by **Dhabale S and Kulshrestha M** entitled “Yield Prediction of Paddy Using Regression Based Statistical Models for Anand District, Gujarat”. For virtual poster presentation in National Conference on ‘ Strategic Reorientation For Climate Smart Agriculture .’ Organized by Association of Agrometeorologists, Ludhiana chapter & Department of Climate Change and Agricultural Meteorology, PAU, Ludhiana during 17 to 19th, March 2021.

2) Accepted a research paper by **Dhabale S , Kulshrestha M and Lungariya M.** entitled “Weekly Rainfall Probability Analysis By Gamma Distribution Model and Advisory To Farmers For Crop Operations In Anand Station Of Gujarat.” For virtual poster presentation in International Symposium on Tropical Meteorology “Changing Climate: Consequences and Challenges (INTROMET-C4)”. Organized by Indian Meteorological Society, Cochin Chapter and hosted by Cochin University of science and technology, Kerala during the period November 23<sup>th</sup> to 26<sup>th</sup> 2021.

**Attended: Conferences/Seminars/Workshops.**

Sr.No	Attended conferences/seminars/workshops	Number of
1	International conference/workshop	8
2	State level seminar/workshop:	11
3	National Seminar/workshop:	10
4	Summer/winter course:	6
5	National Refresher courses/Training:	8

**Life membership of National/ International bodies**

- Gujarat Association for Agricultural Sciences (GAAS).
- Founder Life member of Association of Agro-Meteorologists
- Life member of Association of Mathematician: SUGANITAM
- Member of Anand University Teachers Association: AUTA
- Life member of India Meteorological Society, Ahmedabad Chapter (IMSA)
- Life member of ' ViganBharti'

\*\* Member of MSc and Ph D Student of Agricultural statistics advisory committees.

Reviewed Research Paper of

1. Neural, Parallel and Scientific computations Dynamic Publishers, Inc.
2. Journal of agrometeorologist (ISSN 0972-1665), published by association of Agrometeorologist.
3. Applied Soft Computing published by Elsevier

Publications.

- i Chinchorkar SS, Subbaiah R, Kulshrestha M and Vaidya VB. 2022. Evolution of Weather Parameters and Trend Analysis over Junagadh, Gujarat. *Journal of AgriSearc* 9(1): 97-102 (NAAS :4.71)
- ii Dhabale,S., Vaidya, V.B. &Kulshreshtha, M.S. (2020). Characterization of Nakshatra-Wise Rainfall, Its Trend & Relation with Paddy Yield of Anand District, *Ind. J. Pure Appl. Biosci.* 8(6), 241-247. doi : <http://dx.doi.org/10.18782/2582-2845.8449>
- iii Vaidya, V.B., Suvarna, D., &Kulshreshtha, M.S. (2020). Evaluation of Frequency Analysis of Distinctive Rainfall Intensity for various Stations of Gujarat. *International Journal of Innovative Science, Engineering and Technology (IJSET)*, ISSN (Online) - 2348-7968, 7(12), pp. 420-435.
- iv V.B. Vaidya , SuvarnaDhabale , K.S. Damle , L.D. Chimoteand M.S. Kulshreshtha Astro-Meteorological Rainfall Prediction and Validation for Monsoon 2018 in Gujarat, *India Int.J.Curr.Microbiol.App.Sci* (2019) 8(5):2359-2370 (NAAS :5.38) ; **ICV 2018: 95.39**
- v K. Manjusha, P. Nitin and D. Suvarna: “ Exposure, Perception and Advantages about Weather based Agro-advisory Services by Selected Farmers of AnandDistrict.” *Int.J.Curr.Microbiol.App.Sci.*2019.8(5): 1934-1944 (NAAS :5.38) ; **ICV 2018: 95.39**
- vi Nitin D. Patel, MurariLal Gaur and Manjusha. S. Kulshrestha:” Pragmatic Mathematical Perceptions for Judging Role of Diverse Variables during Ferrofluid Based Lubrication of Bearings used in Agricultural Sector in Agricultural Sector.” *International Journal of Current Engineering and Technology* 2018 E-ISSN 2277 – 4106, P-ISSN 2347 – 5161 pg:1581-1595**HIndex 24**
- vii Kulshrestha M: “Correlation between weather parameters & Mango yield and yield prediction.” Published in the *International Jr Asian Academic Research Associates Journal of Social Science and Humanities*. May 15<sup>th</sup> 2014issue 23. **Impact Factor: ISI : 0911; ISRA: 2.015; ICV:5.05**
- viii ulshresthaM.,BhattacharyaB.,LunagariyaM.,SuvarnaDhabale,Bhowmik,P.,Pandey,V. 2014:“ModelToEstimatePhotosyntheticallyActiveRadiationInCloudlessSkyUsing AtmosphericData.”PublishedintheInternationalJrAsianAcademicResearchAssociates *Journal of Multidisciplinary*. February 15<sup>th</sup> 2014 issue20. **Impact Factor: ISI : 0911; ISRA: 2.015 ; ICV:5.05**
- ix Kulshrestha,M.S.,George,R.K.andShekh,A.M.:2010“Mathematicalmodelingofland surfaceparameters/processesusingartificialneuralnetworks.”PublishedinInt.Jr. (Proceedings)ofNeural,Parallel&ScientificComputations4(2010)227-231. **H Index: 12 ; SJR:0.13**
- x Kulshrestha,M.S.,Shekh,A.M.andVyaspandey.:2010“Astudyoneffectofweather parametersbyartificialneuralnetworksonyieldofAonla(Indiangooseberry)under different fertilizers treatments.” .” Published in *Int. Jr. (Proceedings) of Neural, Parallel&ScientificComputations4(2010)232-235* **H Index: 12; SJR:0.13**

- [xi](#) Kulshrestha, M. S., George, R. K. and Shekh, A. M.: 2009 "Application of artificial neural networks to predict the probability of Extreme rainfall and comparison with the probability by Fisher Tippet Type-II distributions." Published in Int. Jr. of Applied Mathematics and computations (IJAMC), vol 1(3), pp 118-131, (2009).

**Impact factor: 3.472; SJR:0.969; Cite Score: 5.6**

- [xii](#) Kulshrestha, M.S., George, R.K. and Shekh, A.M.: 2008 "Application of Double Fourier series and Artificial Neural Network in prediction of annual rainfall." Jr. of Agro Meteorology. Special Issue, part -I, vol 10 pp 247-248.

**NAAS:6.64 SJR:0.27**

- [xiii](#) Kulshrestha, M.S. and George, R.K.: "Prediction of Annual Rainfall By Double Fourier Series and Artificial Neural Network." Int. Jr of Neural, Parallel and Scientific computations vol.15, no.4, December (2007).

**H Index: 12; SJR:0.13**

- [xiv](#) Kulshrestha, M.S., George, R.K. and Shekh, A.M.: "Prediction of the weekly Rainfall probabilities by Gamma distribution and Artificial Neural Networks Jr of Agro Meteorology, vol.9, no.2 December (2007)

**NAAS:6.64 SJR:0.27**

- [xv](#) Kulshrestha, M.S., George, R.K. and Shekh, A.M.: "Prediction of the rainfall of the Anand station of Gujarat using Artificial Neural Network" Jr. of Agro Meteorology. Special Issue, 6, pp 233-236, (2004).

**NAAS:6.64 SJR:0.27**

- [xvi](#) George, R.K., Kulshrestha, M.S., Shekh, A.M. and Jaita, H.: "Prediction of Soil Temperatures Using Artificial Neural Networks." Jr. of Agro Meteorology. 31&2: pp 169-173, (2001).

**NAAS:6.64 SJR:0.27**

- [xvii](#) Kulshrestha M.S. and Shekh, A.M.: "Estimation of Soil temperature by Harmonic Analysis" Mausam 52, 2, pp 379-384, (2001).

**5-year Impact Factor : 0.395; NAAS:6.31**

- [xviii](#) Kulshrestha, M.S., Shekh, A.M. and Parmar, R.S.: "Extreme Value Rainfall Analysis of Gujarat State." INTROP MET -97, Asian monsoon & Pollution over the monsoon environment held on Dec. 2-5, 1997, IIT, New Delhi, India. Vayu Mandal, pp 45-48, (1999).

- [xix](#) Shekh, A.M., Kulshrestha, M.S., Parmar, R.S., Patel, H.R.: "Relationship of Mean Temperatures with Screen Temperatures" Mausam 49, 1, pp 21-26, (1998).

**5-year Impact Factor : 0.395; NAAS: 6.31**

(b) Other publications.

- [xx](#) Kulshrestha, M.S., George, R.K. and Shekh, A.M.: "Estimation of Hourly Air Temperatures By William and Logan Model, Double Fourier Series and Artificial Neural Networks." published in the proceedings of International conference at Atlanta on Dynamic Systems and Applications, (2007).

- xxi Kulshrestha, M.S., Shekh, A.M. and Parmar, R.S.: "Rainfall probability Analysis using Incomplete Gamma Distribution" Presented and Published in Proceeding of "International Conference on Managing Natural Resources for Sustainable Agricultural Production in the 21<sup>st</sup> Century". Held at IARI, New Delhi 14-18. Volume- II pp. 600-603, (2000).
- xxii Kulshrestha, M.S., Shekh, A.M., Bapuji Rao Band Upadhyay, U.G.: "Extreme Value Analysis of Rainfall of Krishna Godavari Basin, Andhra Pradesh." Water & Energy 2001 9-12 Oct 1995. Awarded Merit by Central Board of Irrigation and Power. pp 96-101, (1995).

[Type text]

**Resume of KulshresthaManjusha**

[Type text]

Prepared a Mathematics tutorial book for Undergraduate students.

- Dr.M.S.Kulshrestha, and SuvarnaDhabale, prepared manual for MATLAB Practical of “Introduction to MATLAB” for Engineering Mathematics-I (MATH111), Agricultural Information Technology College.
- Dr.M.S.Kulshrestha, SuvarnaDhabale prepared practical manual for MATLAB Practical for Mathematics in Biology and Agricultural (AGM607),

Published eBook,

**Prediction of Weather Parameters by Harmonic Analysis and Artificial Neural Networks**

All Rights Reserved

Copyright © 2013 **Manjusha Kulshrestha**

All Rights Reserved. This book may not be reproduced, transmitted, or stored in whole or in part by any means, including graphic, electronic, or mechanical without the express written consent of the publisher except in the case of brief quotations embodied in critical articles and reviews.

Booktango books may be ordered through booksellers or by contacting:

Booktango

1663 Liberty Drive

Bloomington, IN 47403

Weather Parameters and Mango Yield Prediction Using Principal Component Analysis & Artificial Neural Network.

All Rights Reserved

Copyright © 2014 Manjusha Kulshrestha

All Rights Reserved. This book may not be reproduced, transmitted, or stored in whole or in part by any means, including graphic, electronic, or mechanical without the express written consent of the publisher except in the case of brief quotations embodied in critical articles and reviews.

Booktango

1663 Liberty Drive

Bloomington, IN 47403

[www.booktango.com](http://www.booktango.com)

877.445.8822

ISBN: 978-1-4689-4928-5 (ebook)

[Type text]

## Resume of KulshresthaManjusha

[Type text]

### SPECIAL ACHIEVEMENTS

	DetailsofAward	Year
Sr. No		
1	Received travel grant from Department of science and Technology, India to attend and present the research paper in the International conference at ATLANTA, U SA.	2011
2	Member of Editorial Committee of "Proceedings of Neural parallel and scientific computations, volume 4, year 2010 Published by Dynamic Publishers, U SA.	2010 2008
3	Best Poster Award AtAnand Agricultural University, Anand ,Gujarat. By Association of Agro meteorologists forthe research paper entitled "Prediction ofweeklysoiltemperaturesbyartificial neuralnetworksandharmonicanalysis" in." National seminar on Agro Meteorological Services for farmers From 10- 13 <sup>st</sup> November	2008
4	Certificate of Special Best Poster Presentation Award At Central research Institute of Dry land Agriculture(CRIDA), Hyderabad, A. P, India by Association of Agro meteorologists for the research paper entitled "Applications of Double variable Fourier series and Artificial Neural Network in annual rainfall prediction." in an International symposium on Agro meteorology and Food Security." From 18- 21 <sup>st</sup> February. Also, Felicitated by B A College of Agriculture, AAU, Anand.	2007
5	Received travel grant from Department of science and Technology,Indiatoattendandpresenttheresearch paperinthe International conference at ATLANTA, U S A. Here, acted as a session Organiser.	1995
6	Certificate of Merit award At New Delhi by Central Board of Irrigation & Power in International Conference." Water & Energy 2001 for the research paper entitled "Extreme Value Analysis of Rainfall of the Krishna- Godavari Basin" Andhra Pradesh, India.Int. Conf. 9-12Oct.	

[Type text]

## **Resume of KulshresthaManjusha**

[Type text]