Present employer: Anand Agricultural University, Anand, Gujarat, India.

Birth Date: 26th September 1962.

Sex: Female

Highest Educational Qualification: Ph D (Applied Mathematics).

Contact details

Mobile telephone number: 8511185971(Mb)

Email address: hod_bsh@aau.in; kush122003@yahoo.co.in

Employment history

i) 1st April 2019 to continue   :   *Professor & Head
                        Department of Basic Sciences and Humanities,
                         B A College of Agriculture,
                        Anand Agricultural University, Anand, Gujarat, India.

	Teaching	**Research**	**Administration**
Performed duties	Taught the Applied Maths and Biomathematics to Polytechnic, Under Graduate and Post Graduate students of Agriculture. 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	Did the departmental Research work: 1) Prediction of monthly rainfall using Double Fourier series and Artificial Neural Networks. 2) Study of exposure, perception and advantages realized about weather based agro-advisory services by selected farmers of Anand district.	Department of Basic sciences and Humanities is strengthening by two professors and three Assistant Professors of different disciplines like English ,Maths and physics with six different collaborative projects with ISRO, Ahmedabad .

ii) 1st February 2017 to 31/12/2018:   Professor & Head
                        Department of Agricultural Meteorology,
                        Maths, Physics and Agril. Engineering,
                         B A College of Agriculture,
                        Anand Agricultural University, Anand, Gujarat, India.

        Sixteen numbers of observatories of different research stations under Anand Agricultural University jurisdictions were strengthen by installation of instruments to measures the different meteorological parameters.

	Teaching	Research	Administration
Performed duties	Taught the Applied Maths and Biomathematics to Polytechnic, Under Graduate and Post Graduate students of Agriculture It covers different topics Viz. Differential Equations, Calculus, Mathematical Analysis, Bio-Mathematics etc.	Did the departmental Research work: developed the Mathematical/ Statistical Model for prediction of crop yield / Weather parameters in Meteorology Agricultural Meteorology using Microsoft excel, MATLAB , SAS etc.	• Department of Agricultural Meteorology is strengthening by two Professors, three Associate Professor and seven Assistant Professors of different disciplines like Agirl.Meteorology, Maths, Physics and Agril. Engineering • 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.

iii) 25th May 2010 to 31/1/2017   :   Professor

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

iv) 25th May 2007 to 24th May 2010   Associate Professor (Maths),
Department of Agricultural Meteorology,
Anand Agricultural University, Anand, Gujrat,India

v) 21st April 1989 to 24th May 2007   Assistant Professor (Maths)
Department of Agricultural Meteorology,
Anand Agricultural University, Anand, Gujrat,India

iv) 23 th Nov 1984 to 15th April 1987

Lecturer in Mathematics

Bahauddin Science College, Junagadh, Gujarat.
To teach mathematics at Undergraduate level. Viz. Differential Equations, Calculus, Mathematical Analysis,
 Bio- Mathematics

v) 02nd Dec 1987 to 05th April 1989

Lecturer in Mathematics

R R Lalan College , Bhuj, Gujarat.
Teach mathematics at Undergraduate level. Viz. Differential equations, Calculus, Mathematical Analysis, Abstract Algebra.

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vi) 08th –20th April 1989

Lecturer in Mathematics

H& H B Kotak Science College,
Rajkot, Gujarat, India
Teach mathematics at undergraduate level.

Education

25th 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.

June 1984

M. Sc.
Pure Mathematics
Sardar Patel University, Vallabhvidya Nagar.
 (Received National Merit Scholarship)

June 1982

B. Sc.
Mathematics
Saurastra University, Rajkot
(Received College Merit scholarship & free ship as NCC Candidate)

Research work

❖ Developed the William & Logan model for Anand station and also used Double Fourier Series and Artificial Neural Networks to predict hourly air temperatures, Monthly and Annual Rainfall.

❖ Used Fourier series for one variable & two variables and new technique artificial neural network (ANN) to predict the Soil temperatures at different depths & monthly and annual 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 the Gujarat state (58 stations) of India (Agriculture Zone wise).

❖ Did Principal Component Analysis for Effect of Weather Parameters on Yield of Indian Goose Berry (AONLA) and mango. Here MATLAB and SAS were used.

❖ Completed the SAC-AAU Collaborative project on "Modelling for estimation of Incident Photosynthetically Active Radiation (IPAR) using INSAT 3D data" September 2011 to March 2015 . Here, we have developed a PARcalc (2004) model for clear and cloudy sky to predict the Photosynthetically Active Radiation which was based on a simplification of the general radiative transfer equations.

❖ Submitted the research proposal in one day national level Neno satellite for Earth Monitoring and Observation- Aerosol Monitoring (NEMO-AM) Science Workshop on 28th April 2015. Here, submitted a research proposal was for collaborative project AAU-SAC, Ahmedabad for "**Determining Aerosol Forcing on Incident Photosynthetically Active Radiation over Cropped Surfaces Using NEMO-AM Observations."** with ISRO scientists.

❖ 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.

❖ Principal Investigator of the two Plan projects (schemes)

   i) Center for Weather Forecasting and Climate Change
                              &
   ii) Application of Remote Sensing in Agriculture

❖ Did Rainfall prediction by Astro-meteorology for Gujarat state.
❖ Did Monthly rainfall prediction by two non linear models namely, Double Fourier Series and Artificial Neural Networks and recommendation given to scientific community.
"To predict the monthly rainfall with greater accuracy from June to September in middle Gujarat using 55 years of weather data in two non linear models it is recommended to use Double Fourier series with two inputs monthly mean Maximum air temperature and relative humidity whereas four inputs namely, Maximum air temperature of May, monthly mean Relative .humidity, monthly rainfall and monthly wind speed of previous year in Artificial Neural Network. "

❖ Did Frequency analysis of Rainfall for middle Gujarat as a team member.

❖ Did extension work
"Study of exposure, perception and advantages realized about weather based agro-advisory services by selected farmers of Anand district"
        Data: 110 no. of farmers was selected from nearby villages of Anand District like, Gada, Balinta and Dali etc. including marginal, small and medium.

 It is concluded that weather based agro advisory is useful to the farmers and have advantage to improve their agriculture income and crop protection in different disaster events with suggestion having special advisory before three days.

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

Special achievements

1.   Year 2008 **Best Poster Award** At Anand Agricultural University, Anand ,Gujarat By Association of Agro meteorologists for the research paper entitled "Prediction of weekly soil temperatures by artificial neural networks and harmonic analysis" in." National seminar on Agro Meteorological Services for farmers From 10- 13st November.

2.   Year 2008 **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- 21st February.
                Felicitated by B A College of Agriculture, AAU, Anand.

3   Year 2007 and 2011 Received **travel grant** from Department of science and Technology, India to attend and present the research paper in the International conference at ATLANTA, U S A. Here, acted as a session Organiser.

 4   Member of Editorial Committee of   "Proceedings of Neural parallel and scientific computations, volume 4, year 2010 Published by Dynamic Publishers, U S A.

5   Year 1995 **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. 9-12 Oct

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 ' Vigan Bharti'

Reviewer 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.

(a) In Refereed journals

i   Astro-Meteorological Rainfall Prediction and Validation for Monsoon 2018 in Gujarat,
         India V.B. Vaidya1 , Suvarna Dhabale , K.S. Damle , L.D. Chimote and M.S. Kulshreshtha
         Int.J.Curr.Microbiol.App.Sci (2019) 8(5): 2359-2370

ii   K. Manjusha, P. Nitin and D. Suvarna: " Exposure, Perception and Advantages about
         Weather based Agro-advisory Services by Selected Farmers of Anand District."
         Int.J.Curr.Microbiol.App.Sci.2019.8(5): 1934-1944

iii   Nitin D. Patel, Murari Lal 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 E-ISSN 2277 – 4106, P-ISSN 2347 – 5161
         pg:1581-1595

iv   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 15th 2014 issue 23.

v   Kulshrestha M.,Bhattacharya B., Lunagariya M., Suvarna Dhabale, Bhowmik, P.,Pandey, V.
         2014: "Model To Estimate Photosynthetically Active Radiation In Cloudless Sky Using
         Atmospheric Data." Published in the International Jr Asian Academic Research Associates
         Journal of Multidisciplinary. February 15th 2014 issue 20.

vi   Kulshrestha, M. S., George, R. K. and Shekh, A. M.: 2010 "Mathematical modeling of land surface parameters/processes using artificial neural networks." Published in Int. Jr. (Proceedings) of Neural, Parallel & Scientific Computations 4(2010) 227-231.

vii   Kulshrestha, M. S., Shekh, A. M. and Vyas pandey.: 2010 "A study on effect of weather parameters by artificial neural networks on yield of Aonla (Indian gooseberry) under different fertilizers treatments." ." Published in Int. Jr. (Proceedings) of Neural, Parallel & Scientific Computations 4(2010) 232-235

viii   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).

ix   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.

x   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).

xi   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)

xii   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).

xiii   George, R. K., Kulshrestha, M. S., Shekh, A. M. and Jaita, H.:   "Prediction of Soil Temperatures Using Artificial Neural Networks." Jr. of Agro Meteorology.3 1&2:, pp 169-173, (2001).

xiv   Kulshrestha M. S. and Shekh, A. M. : "Estimation of Soil temperature by Harmonic Ananlysis" Mausam 52, 2, pp 379-384, (2001).

xv   Kulshrestha, M. S., Shekh, A. M. and Parmar, R. S.: "Extreme Value Rainfall Ananlysis of Gujarat State." INTROPMET-97,'Asian monsoon& Pollution over the monsoon

xvi   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).

   (b) Other publication.

xvii   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).

xviii   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 21st Century". Held at IARI, New Delhi 14-18. Volume –
        II pp. 600-603, (2000).

xix   Kulshrestha, M. S., Shekh, A. M., Bapuji Rao B and Upadhyay, U. G.:" Extreme Value
        Ananlysis 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).

- ❖ 1) Published eBook, "Prediction of Weather Parameters by Harmonic
        Analysis and Artificial Neural Networks " is available for purchase through
        the Booktango bookstore.
    - ❖ 2) e-
        book: Weather Parameters and Mango Yield Prediction Using Principal
                     Component Analysis & Artificial Neural Network.

    - ❖   Prepare
        a Mathematics tutorial book for Undergraduate students.