

Dr. Vanama Venkata Sai Krishna



Geospatial data analyst || Disaster Management Specialist ||
Urban Planner

☎ (+91) 72-0713-8828 || ✉ vsaikrishna1990@gmail.com || [S](https://www.linkedin.com/in/vsaikrishna1990) vsaikrishna1990
Web: <https://sites.google.com/view/venkata-sai-krishna>

Profile

Hard-working and enthusiastic doctoral graduate from IIT Bombay with a major in geospatial data analytics. Actively involved in various applications of Remote Sensing (RS) and Geographic Information System (GIS) in various aspects like flood management and urban expansion monitoring. I have formulated an efficient framework suitable for different cloud computing platforms while effectively utilizing the temporal Synthetic Aperture Radar (SAR) datasets in operational flood mapping at varying spatial scales. This framework was successfully implemented on Google Earth Engine (GEE) and European Space Agency (ESA) RSS CloudToolbox Service platforms and analyzed multiple flood events to check its universal applicability. Besides, I have devised an innovative SAR-based polarimetric index for accurate flood mapping in high-density urban areas. In addition, a standalone software tool is also developed for flood mapping using SAR images at both global and local approaches. Publications from these works and their advocacy have become seminal in the pursuit of flood monitoring with evident interest among remote sensing communities and application-based business enterprises.

My career objective is to obtain a research position in the field of urban planning aspects or disaster management using Machine Learning (ML) / Artificial Intelligence (AI) technologies where I can associate with a leading scientific group of dedicated people to expand my scientific and technical skills. I aspire to work in a challenging environment to achieve my career goals with hard work, intelligence, and widening my technical spectrum.

Education

Indian Institute of Technology Bombay, Mumbai, India

Jan. 2016–Nov. 2021

Doctor of Philosophy (Ph.D.)

- Thesis title: Rapid Flood Mapping Using Multi-temporal SAR Data in Heterogeneous Built-forms.
- Advisor: Prof. Y. S. Rao
- CPI: 8.5/10.0

Indian Institute of Remote Sensing, ISRO and Andhra University, A.P, India

Aug. 2012–Aug. 2014

Master of Technology (M.Tech) in Remote Sensing and Geographical Information System with specialization : Human Settlement Analysis

- Thesis title: Web-based water utility management using geospatial techniques: A case study of Dehradun city, India.
- Advisors: Mr. B. D. Bharath and Mr. Kamal Pandey
- CPI: 8.08/10.0

Jawaharlal Nehru Architecture and Fine Arts University, Hyderabad, India

Jun. 2008–Jun. 2012

Bachelor of Technology (B.Tech) : Planning

- Thesis title: Application of GIS techniques in urban solid waste management - A case study of Ongole town, A.P, India.
- Advisor: Ms. Tuhina Sinha
- CPI: 6.78 /10

Sri Chaitanya Junior Kalasala, Andhra Pradesh, India

Apr. 2006-Apr.2008

- Intermediate (12th) || Branch: MPC || Board of Intermediate Education, A.P
- Marks: 93.6%

D R R M Municipal High School, Andhra Pradesh, India

Mar. 2006

- Matriculation (10th)|| Board of Secondary Education, A.P
- Marks: 90.66%

Work Experience

Amity Institute of Geoinformatics And Remote Sensing (AIGIRS) Amity University, Noida (U.P.), India. Assistant Professor	Aug. 2022–Present
Centre for Urban Science and Engineering Indian Institute of Technology Bombay, Mumbai, India. Research Associate <ul style="list-style-type: none">• RISAT-1 based flood mapping for Chennai city.• Development of standalone software for automatic flood mapping using SAR images at global and local approaches.	Jul. 2021–Nov. 2021
Centre for Urban Science and Engineering Indian Institute of Technology Bombay, Mumbai, India. Project Research Associate <ul style="list-style-type: none">• Projects involved: 1) Urban Form and Extreme Precipitation Events: Are compact cities more vulnerable to flooding? 2) C-USE Establishment of Centre of Excellence for Training and Research in Frontier areas of Science and Technology (FAST).• SAR polarimetry and flood mapping application.• Proposed automatic processing chain for monitoring flood dynamics.	Jan. 2015–Jan. 2018
JSR Planning & Research Consultants GIS Engineer <ul style="list-style-type: none">• Landuse/Attribute mapping for Nuzvid/Gudivada/Eluru ULBS's under APMDP project.• Pilot mapping work on Development plan for Banaganapalle.	Sep. 2014–Dec. 2014
Aarvee Associates Architects, Engineers & Consultants Pvt. Ltd. Trainee Urban planner <ul style="list-style-type: none">• Updation of Rajahmundry master plan and broad Land Use plan; Data collection for Census and data collection on socio-economic details from the concerned departments.• Digitization of Land use for the broad Land Use map of Rajahmundry and Kurnool towns.• Preparation of sector maps for CDP of seven towns (Barhi, Barela, Bhedaghat, Majholi, Sahapura, Katangi & Patan towns in Madhya Pradesh).	Mar. 2012–Jun. 2012

Teaching Experience

Amity Institute of Geoinformatics And Remote Sensing (AIGIRS) Amity University, Noida (U.P.), India. Assistant Professor Masters/Ph.D. Courses involved: <ul style="list-style-type: none">• GIS and Remote Sensing in Disaster Management• GIS and Remote Sensing in Marine Science• MATLAB Programming for Spatial Sciences	Aug. 2022–Present
Centre of Studies in Resources Engineering (CSRE) Indian Institute of Technology Bombay, Mumbai, India Teaching assistant <ul style="list-style-type: none">• Courses involved: GNR602: Advanced Methods in Satellite Image Processing GNR607: Principles of Satellite Image Processing GNR617: Image Interpretation Laboratory GNR630: Introduction to Geospatial Technologies and Applications GNR647: Microwave Remote Sensing.	Jan. 2016–Jun. 2021
Environmental Science and Engineering Department (ESED) Indian Institute of Technology Bombay, Mumbai, India Teaching assistant <ul style="list-style-type: none">• Courses involved: ES 653: Environmental Impact Assessment ES680: GIS for Environmental Planning and Management.	Jan. 2016–Jun. 2021

- Prepare QGIS tutorials, SAR training presentations, and notes.

Research Interests

- Disaster Monitoring, Flood mapping, and Fire mapping
- Urban Expansion Monitoring (UEM), Urban Heat Island (UHI), Urban solid waste management
- SAR Polarimetry, Quad and Compact polarimetry.
- Google Earth Engine (GEE), Machine Learning (ML).

Research Projects

Project	Sponsoring Agency	Duration
Principal Investigator (PI) , Rapid flood monitoring and vulnerability assessment using L- band Earth Observation (EO) images with special emphasis on Indian cities	Japanese Aerospace Agency (JAXA)	2022-2025
Principal Investigator (PI) , European Space Agency (ESA) RSS Cloudtoolbox Service for image processing.	ESA	2020-2021
Principal Investigator (PI) , Urban form characterization and their backscattering library generation using temporal L-band SAR images for operational flood disaster response.	JAXA	2019-2021
GIS Engineer , GIS-based forest boundary mapping in parts of Navi Mumbai area.	Forest dept., Mumbai.	2018-2020

Technical Skill

- Programming Skill: MATLAB || Python || R || JS
- Software and Tools: ArcGIS || QGIS || ERDAS Imagine || ENVI || PolSARPro || SNAP || Earth Engine
- Drafting and Design Tools: AutoCAD

Online Courses / Certifications

- Completed the "**Synthetic Aperture Radar: Hazards**" course offered by edX. ([Link](#))
- Completed the "**Copernicus MOOC**" course conducted by the University of Luxembourg Competence Centre and PwC during Mar-May 2020. ([Link](#))
- Completed the "**Validation of settlement mapping**" course conducted by Copernicus **Research and User Support** (RUS).
- Completed the "**Methodology for Settlement Mapping**" course conducted by Copernicus **Research and User Support** (RUS).
- Completed the "**Urbanization: Settlement Extent Mapping**" course conducted by Copernicus **Research and User Support** (RUS).
- Completed the "**UAV Remote Sensing and Applications**" course conducted by IIT Bombay and IIRS from 03 July - 07 July 2017. ([Link](#))
- Completed the "**Webinar Series on SAR Data Processing and Applications**" organized by WGCapD, CEOS from April 17 to June 05, 2017. ([Link](#))
- Completed the "**Technical Communication for Scientists and Engineers**" course offered by IIT BombayX, by IIT Bombay from 11 January - 02 May 2016. ([Link](#))
- Completed the "**Geospatial Technologies for Urban Planning**" course conducted by IIT Bombay and IIRS from 11 February - 15 March 2016. ([Link](#))
- Completed online **R Programming, Regression models and exploratory data analysis** courses from Coursera conducted by Johns Hopkins University on October 4, 2015. ([Link](#))
- Attended the three days of course "**Introduction to ENVI**" organized by ESRI, India. [Registration no: 00060206-3] ([Link](#))

Awards and Achievements

- Received **best paper award** in IEEE International Conference on Emerging Smart Computing and Informatics (ESCI 2020) conference.
- Received **second prize** in IEEE International Conference on Convergence to Digital World – Quo Vadis (ICCDW-2020).
- IEEE Geoscience and Remote Sensing Society **Travel Grant**, IEEE GRSS and SAC-ISRO joint SMAP-NISAR Workshop on Soil Moisture and Agricultural Monitoring using Microwave Remote Sensing (Ahmedabad, India) February 2018.
- IEEE Geoscience and Remote Sensing Society **Travel Grant**, IEEE IGARSS (Valencia, Spain) July 2018
- Ph.D. **fellowship**, Ministry of Human Resource Development, Govt. of India (New Delhi, India) Jan. 2016 to Oct. 2021.

Synergistic Activities

Peer Recognition:

Position	Journal	Publisher
Journal Reviewer	Geomatics, Natural Hazards and Risk	Taylor & Francis
Journal Reviewer	Geocarto International	Taylor & Francis
Journal Reviewer	Geo-spatial Information Science	Taylor & Francis
Journal Reviewer	Current Science	Indian Academy of Sciences
Journal Reviewer	Journal of the Indian Society of Remote Sensing	Springer

Professional Membership:

- Associate Member: Institute of Town Planners (ITPI), India (2017-152)
- Student Member: Institute of Electrical and Electronics Engineers (IEEE)
- Student Member: IEEE Geoscience and Remote Sensing Society
- Life Member: Indian Society of Remote Sensing (ISRS), India (L-4575)
- Student Member: Deep Foundations Institute

Invited Presentations / Seminars/ Talks

- V. S. K. Vanama, "Applications of Earth Observation (EO) images in disaster management with special emphasis on flooding," Online presentation by Centre for Geo Informatics, Jamsetji Tata School of Disaster Studies, Tata Institute of Social Sciences (TISS), Sep 2020, Mumbai, India.

Publications

Peer-review journals:

- (J6) **V. S. K. Vanama**, Y. S. Rao, and C. M. Bhatt. "Rapid mapping of cyclone induced flood event through automated approach using multi-temporal Earth Observation (EO) images in a cloud platform." **European Journal of Remote Sensing** 54, no. 1 (2021): 589-609. (doi:<https://doi.org/10.1080/22797254.2021.1983471>)
- (J5) Yadav, Vijay Pratap, Rajendra Prasad, Ruchi Bala, Prashant K. Srivastava, and **V. S. K. Vanama**. "Appraisal of Dual Polarimetric Radar Vegetation Index in First Order Microwave Scattering Algorithm using Sentinel-1A (C-band) and ALOS-2 (L-band) SAR Data." **Geocarto International** just-accepted (2021): 1-12. (doi: <https://doi.org/10.1080/10106049.2021.1933209>)
- (J4) **Vanama, V. S. K.**, Mohamed Musthafa, Unmesh Khati, R. Gowtham, Gulab Singh, and Y. S. Rao. "Inundation mapping of Kerala flood event in 2018 using ALOS-2 and temporal Sentinel-1 SAR images." **Current Science** 120, no. 5 (2021): 915-925. (doi: <https://doi.org/10.18520/cs/v120/i5/915-925>)
- (J3) **Vanama, V. S. K.**, Y. S. Rao, and C. M. Bhatt. "Change detection based flood mapping using multi-temporal Earth Observation satellite images: 2018 flood event of Kerala, India." **European Journal of Remote Sensing** 54, no. 1 (2021): 42-58. (doi: <https://doi.org/10.1080/22797254.2020.1867901>)

- (J2) **Vanama, Venkata Sai Krishna**, Dipankar Mandal, and Yalamanchili S. Rao. "GEE4FLOOD: rapid mapping of flood areas using temporal Sentinel-1 SAR images with Google Earth Engine cloud platform." **Journal of Applied Remote Sensing** 14, no. 3 (2020): 034505. (doi: <https://doi.org/10.1117/1.JRS.14.034505>)
- (J1) **Krishna, VV Sai**, Kamal Pandey, and Harish Karnatak. "Geospatial multicriteria approach for solid waste disposal site selection in Dehradun city, India." **Current Science** (2017): 549-559. (doi: <https://doi.org/10.18520/cs/v112/i03/549-559>)

International/ National Conference:

- (C14) Preet Lal, Gurjeet Singh, Narendra N. Das, Dara Entekhabi, Dharmendra Kumar Pandey, Rowena Lohman, Andreas Colliander, and **Venkat Vanama**. "A Disaggregation Algorithm For The High Resolution Soil Moisture Product From The Upcoming Nisar Mission" In IGARSS 2022-2022 IEEE International Geoscience and Remote Sensing Symposium (In Press) (Full paper)
- (C13) Babu, KV Suresh, and **V. S. K. Vanama**. "Burn area mapping in Google Earth Engine (GEE) cloud platform: 2019 forest fires in eastern Australia." In 2020 International Conference on Smart Innovations in Design, Environment, Management, Planning and Computing (ICSIDEMPC), pp. 109-112. IEEE, 2020. [doi: <https://doi.org/10.1109/ICSIDEMPC49020.2020.9299625>] ([Full paper](#))
- (C12) Kanade, Dhanashri S., **V. S. K. Vanama**, and Sanjay Shitole. "Urban area classification with quad-pol L-band ALOS-2 SAR data: A case of Chennai city, India." In 2020 IEEE India Geoscience and Remote Sensing Symposium (InGARSS), pp. 58-61. IEEE, 2020. [doi: <https://doi.org/10.1109/InGARSS48198.2020.9358951>] ([Full paper](#))
- (C11) **Vanama, V. S. K.**, Sanjay Shitole, U. Khati, and Y. S. Rao. "Split-Window Based Flood Mapping with L-Band ALOS-2 SAR Images: A Case of Kerala Flood Event in 2018." In IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium, pp. 4742-4745. IEEE. [doi: <https://doi.org/10.1109/IGARSS39084.2020.9324012>] ([Full paper](#)) ([Certificate](#))
- (C10) Shitole, Sanjav, Vijay Jain, and **V. S. K. Vanama**. "De-speckling of synthetic aperture radar using discrete fourier transform." In IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium, pp. 1524-1527. IEEE. [doi: <https://doi.org/10.1109/IGARSS39084.2020.9324277>] ([Full paper](#))
- (C9) **Vanama, V. S. K.**, Sanjay Shitole, and Y. S. Rao. "Urban Flood Mapping with C-band RISAT-1 SAR Images: 2016 Flood Event of Bangalore City, India." In 2020 International Conference on Convergence to Digital World-Quo Vadis (ICCDW), pp. 1-4. IEEE, 2020. [doi: <https://doi.org/10.1109/ICCDW45521.2020.9318710>] ([Full paper](#)) [**Secured second prize**]
- (C8) **Vanama, V. S. K.**, K. V. S. Babu, and Y. S. Rao. "Ground truth mapping with multi-temporal earth observation data in ESA CloudTool box: A case of Kerala flood event occurred in 2018." In 2020 International Conference on Emerging Smart Computing and Informatics (ESCI), pp. 133-136. IEEE, 2020. [doi: <https://doi.org/10.1109/ESCI48226.2020.9167570>] ([Full paper](#)) [**Bagged best paper award**]
- (C7) **Vanama, Venkata Sai Krishna**, and Y. S. Rao. "Change detection based flood mapping of 2015 flood event of Chennai city using sentinel-1 SAR images." In IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium, pp. 9729-9732. IEEE, 2019. [doi: <https://doi.org/10.1109/IGARSS.2019.8899282>] ([Full paper](#))
- (C6) Kolekar, Dhanashri, **V. S. K. Vanama**, and Y. S. Rao. "Satellite Based Drought Assessment Over Latur, India Using Soil Moisture Derived from SMOS." International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences 42 (2018): 5. [doi: <https://doi.org/10.5194/isprs-archives-XLII-5-421-2018>] ([Full paper](#))
- (C5) Suresh, Babu KV, and **Venkata Sai Krishna Vanama**. "Fire Detection in a Varying Topography Using Landsat-8 for Nainital Region, India." In 2018 3rd International Conference for Convergence in Technology (I2CT), pp. 1-4. IEEE, 2018. [doi: <https://doi.org/10.1109/I2CT.2018.8529366>] ([Full paper](#))
- (C4) **Vanama, Venkata Sai Krishna**, Y. S. Rao. "Spatio-temporal analysis of passive microwave remote sensing data for rapid detection of large scale flood mapping - a geospatial approach." In Proceedings of 38th Asian Conference of Remote Sensing (ACRS), New Delhi, India, 2017. ([Full paper](#))

- (C3) Alisha Chowdhury, **Vanama, V.S.K.** and Valliappan. AL. "Examining the Effect of the Physical Characteristics of the Urban Green & Blue Spaces in Heat Mitigation: A Case Study of Pune." In Proceedings of 38th Asian Conference of Remote Sensing (ACRS), New Delhi, India, 2017. ([Full paper](#))
- (C2) Babu, KV Suresh, **Venkata Sai Krishna Vanama**, Arijit Roy, and P. Ramachandra Prasad. "Assessment of forest fire danger using automatic weather stations and MODIS TERRA satellite datasets for the state Madhya Pradesh, India." In 2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI), pp. 1876-1881. IEEE, 2017. [doi: <https://doi.org/10.1109/ICACCI.2017.8126118>] ([Full paper](#))
- (C1) **VV, Sai Krishna**, Anil Kumar Dikshit, and Kamal Pandey. "Flood modelling with global precipitation measurement (GPM) satellite rainfall data: a case study of Dehradun, Uttarakhand, India." In Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI, vol. 9880, p. 98801A. International Society for Optics and Photonics, 2016. [doi: <https://doi.org/10.1117/12.2223928>] ([Full paper](#))

Conference Presentations:

- (CP1) **V. S. K. Vanama**, and Y. S. Rao, "Automatic thresholding based flood mapping with temporal Sentinel-1 images" presented at the National Symposium on Innovations in Geospatial Technology for Sustainable Development with special emphasis on NER during 20-22 Nov 2019 at North Eastern Space Applications Centre (NESAC), India.
- (CP2) **V. S. K. Vanama**, and Y. S. Rao, "Spatial Identification of Flood Areas Using Temporal AMSR-2 Data" presented at the 4th World Congress on Disaster Management (WCDM-2019) during 29th Jan – 1st Feb 2019 at IIT Bombay, Mumbai, India.
- (CP3) S. Babu K.V., **V. S. K. Vanama**, and Ridhika Aggarwal "Change detection based burnt area mapping using freely available Sentinel-2 images" presented at 4th World Congress on Disaster Management (WCDM-2019) during 29th Jan – 1st Feb 2019 at IIT Bombay, Mumbai, India.
- (CP4) **V. S. K. Vanama**, S. Babu K.V., and Y. S. Rao, "Spatio-temporal Analysis of Chennai City Land Surface Temperature using Landsat 8 data," presented at the International conference on Urban Geoinformatics-2017, Delhi, India, 2017. (Poster)
- (CP5) **V. S. K. Vanama** and Y. S. Rao, "Satellite Based Urban Flood Extent Mapping: A Case Study of Bangalore Metropolitan Region," presented at the National Symposium on Recent Advances in Remote Sensing and GIS with Special Emphasis on Mountain Ecosystems, Dehradun, India, 2016. (Poster)
- (CP6) **V. S. K. Vanama**, S. Babu K.V., and K. Pandey, "Analysis of various fusion techniques for multi spatial resolution images," presented at the National symposium on Geomatics for Digital India, Jaipur, 2015.
- (CP7) **V. S. K. Vanama**, K. Pandey, and B. D. Bharath, "Urban Water Information System (UWIS): A web based spatial decision support system for management and monitoring water utility assets," in FOSS4G-India 2015, Dehradun, India, 2015.
- (CP8) **V. S. K. Vanama**, "Urban surface and sub-surface utility mapping in 3d using geospatial techniques – A case study of part of Dobhalwala ward, Dehradun, India," presented at the National seminar on Changing spectrum of Human Settlements and Planning Education, Amritsar, India, 2014.

Book chapters :

- (BC1) Gautam Dadhich, **Venkata Sai Krishna Vanama**, Hiroyuki Miyazaki, and Indrajit Pal, "Flood damage assessment with multi-temporal earth observation SAR satellite images: A case of Coastal flooding in Southern Thailand" In Disaster Resilience and Sustainability (2021), Springer. [In press]
- (BC2) **Vanama, V. S. K.**, and Y. S. Rao. "Real-Time Flood Mapping with Temporal SAR Images Using ESA CloudToolbox Service." Urban Science and Engineering: Proceedings of ICUSE 2020: 133. [doi: https://doi.org/10.1007/978-981-33-4114-2_11] ([Full paper](#))
- (BC3) **Vanama, Venkata Sai Krishna**, Ch Praveen Kumar, and Y. S. Rao. "Rapid detection of regional level flood events using AMSR-E satellite images." In Proceedings of International Conference on Remote Sensing for Disaster Management, pp. 13-23. Springer, Cham, 2019. [doi: https://doi.org/10.1007/978-3-319-77276-9_2] ([Full paper](#))

Linguistic Aptitude

- To Read: English, Telugu, Hindi

- To Speak: English, Telugu, Hindi
- To Write: English, Telugu, Hindi
- Native Language: Telugu

References

Prof. Y. S. Rao

Microwave Remote Sensing Lab (MRSLab),
Centre of Studies in Resources Engineering (CSRE),
Indian Institute of Technology Bombay, Powai, Mumbai-400 076, India.
Phone: +91-22-25767683; +91-9769123399; Fax: +91-22-25723190
E-mail: ysrao@csre.iitb.ac.in; ysrao33@gmail.com

Prof. A. K. Dikshit

Environmental Science and Engineering Department (ESED),
Indian Institute of Technology Bombay, Powai, Mumbai-400 076, India.
Phone: +91-22-25767862; +91-9869416792; Fax: +91-22-25723190
E-mail: dikshit@iitb.ac.in; akd.iitb@gmail.com

Mr. C. M. Bhatt

Scientist/Engineer – SF, Disaster Management Studies Department,
Indian Institute of Remote Sensing, Indian Space Research Organization,
Dept. of Space, Govt. of India, 4-Kalidas Road, Dehradun - 248001.
Phone: +91-135-2524345; +91-9985785869; Fax: +91-135-2740785
Email: cmbhatt@iirs.gov.in; cmbhatt2@gmail.com

Personal Details

Father's Name	Prachanda Siva Kumar Vanama
Date of Birth	20 Jul. 1991
Marital Status	Married
Nationality	Indian
Present Address	D.no:27, Flat B, Plotno:1161, 17 th street, Anna Nagar West end Colony, Anna Nagar western extension, Chennai, Tamil Nadu, 600050.
Permanent Address	H.no: 2-162, Beside SBI bank, Chandole, Pittalavanipalem Mandal, Guntur Dist, Andhra Pradesh, 522311.

Declaration

I hereby declare that all the details furnished above are true to the best of my knowledge and belief.

10 Sep 2022

V. V. Seikrishna

(Venkata Sai Krishna Vanama)