Curriculum Vitae

Name	: **Dr. Prashanth Reddy Hanmaiahgari**
Gender	: Male
Nationality	: Indian
Mobile Number	: +91-943-420-0227
Email	: hpr@civil.iitkgp.ac.in; prashanthreddyh@gmail.com;

Work Experience

1. **Associate Professor (April 15, 2019 to present)**
   Department of Civil Engineering
   Indian Institute of Technology, Kharagpur
   West Bengal, India, 721302
2. Assistant Professor (May 27, 2013 to April 14, 2019)
   Department of Civil Engineering
   Indian Institute of Technology, Kharagpur
   West Bengal, India, 721302
3. Associate Professor (Jan 21, 2013 to May 20, 2013)
   Department of Civil Engineering
   UPES, Bidholi, Dehradun,
   Uttaranchal, India, 248007
4. Post-Doctoral Fellowship (2011 Jan 01 to Jan 18, 2013)
   Department of Civil and Environmental Engineering
   University of Windsor, 401 Sunset Ave., Windsor, N9B 3P4, ON, Canada
   Advisors: Dr Ram Balachandar, Dr. Tirupati Bolisetti
   Research areas: River hydrodynamics and Turbulence
5. Post-Doctoral Fellowship (2007 Nov to 2010 Dec)
   Department of Civil and Environmental Engineering
   University of South Carolina, Columbia, SC 29208, USA
   Advisor: Dr M Hanif Chaudhry
   Research areas: Conduit flow and open channel flow

Education

1. **PhD in Civil Engineering (2002 Aug-2006 Dec)**
   IIT Madras, Chennai, India
   Specialization: Hydraulics and Water Resources Engineering
   Advisors: Dr BS Murty and Dr Shankar Narasimhan
   Dissertation: Leak detection in gas pipeline networks using transfer function based dynamic simulation model

2. **M.Tech in Civil Engineering (1999 Aug-2001 Jan)**
   IIT Madras, Chennai, India
   Specialization: Hydraulics and Water Resources Engineering
   CGPA: 8.17/10
   Dissertation: GVF profile computation in cyclic looped open channel networks

Advisor: Dr BS Murty

3. **B.Tech First (Hons.) in Civil Engineering (1994-1998)**
   NIT Kurukshetra (formerly known as REC Kurukshetra), Kurukshetra, India
   Percentage Marks: 73.36

Research and Teaching interests

1. Hydrodynamics
2. Unsteady flows in pipelines and open channels
3. Sediment transport in open channel flows
4. Turbulence in open channels and pipe flows
5. Flow assurance in pipelines and water distribution networks

Publications

Books

1. Kaushik, Mrinal, Hanmaiahgari, Prashanth Reddy (2016), Essentials of Aircraft Armaments, Springer Briefs in Applied Sciences and Technology, Springer Singapore. (ISBN 978-981-10-2377-4, DOI 10.1007/978-981-10-2377-4)

International Journals (SCI indexed)

Published and accepted

1. Devi, K., Mishra, S., Hanmaiahgari, P.R. *et al.* Wake flow field of a wall-mounted pipe with spoiler on a rough channel bed. *Acta Geophys.* (2023). https://doi.org/10.1007/s11600-022-01008-x
2. Pu JH, Pandey M, Li J, Satyanaga A, Kundu S and Hanmaiahgari PR (2022), Editorial: The urban fluvial and hydro-environment system. Front. Environ. Sci. 10:1075282. doi: 10.3389/fenvs.2022.1075282
3. Nima Ikani, Jaan H. Pu, Tarek Taha, Prashanth Reddy Hanmaiahgari, and Nadia Penna, (2022), Bursting phenomenon created by bridge piers group in open channel flow, (preprint) DOI: https://doi.org/10.21203/rs.3.rs-2086458/v1
4. Devi K, Hanmaiahgari PR, Balachandar R, V. Mahendra Reddy, (2022). Effects of Reynolds Number and Submergence Ratio on Turbulence Structures in the Shallow Wake of a Horizontal Pipe Located on a Rough Bed, Physics of Fluids, AIP Publishing (Accepted)
5. Kumar, S.; Singh, H.P.; Balaji, S.; Hanmaiahgari, P.R.; Pu, J.H. Inclusive Hyper- to Dilute-Concentrated Suspended Sediment Transport Study Using Modified Rouse Model: Parametrized Power-Linear Coupled Approach Using Machine Learning. *Fluids* 2022, *7*, 261. https://doi.org/10.3390/fluids7080261
6. Soni, N, Hanmaiahgari, PR, Reddy, VM. Novel thermal treatment model to decontaminate airborne SARS Cov-2 virus for residential and commercial buildings. *Heat Transfer*. 2022; 1- 31. doi:10.1002/htj.22586

7. Wallwork JT, Pu JH, Kundu S, Hanmaiahgari PR, Pandey M, Satyanaga A, Khan MA, Wood A. Review of Suspended Sediment Transport Mathematical Modelling Studies. *Fluids*. 2022; 7(1):23. https://doi.org/10.3390/fluids7010023
8. Mahananda, M., Hanmaiahgari, P. R., and Balachandar R., (2022), On the Turbulence Characteristics in Developed and Developing Rough Narrow Open-channel Flow, Journal of Hydro-environment Research, https://doi.org/10.1016/j.jher.2021.11.003
9. Devi K, Hanmaiahgari PR, Balachandar R, Pu JH. Self-Preservation of Turbulence Statistics in the Wall-Wake Flow of a Bed-mounted Horizontal Pipe. *Fluids*. 2021;6(12):453. https://doi.org/10.3390/fluids6120453
10. Devi K, Hanmaiahgari PR, Balachandar R, Pu JH. A Comparative Study between Sand- and Gravel-Bed Open Channel Flows in the Wake Region of a Bed-Mounted Horizontal Cylinder. *Fluids*. 2021; 6(7):239. https://doi.org/10.3390/fluids6070239
11. Pal, S.; Hanmaiahgari, P.R.; Karney, B.W. An Overview of the Numerical Approaches to Water Hammer Modelling: The Ongoing Quest for Practical and Accurate Numerical Approaches. *Water* **2021**, *13(11)*, 1597. https://doi.org/10.3390/w1311159
12. Pu, J.H.; Wallwork, J.T.; Khan, A.M.; Pandey, M.;Pourshahbaz, H.; Satyanaga, A.; Hanmaiahgari, P.R.; Gough, T. Flood Suspended Sediment Transport: Combined Modelling from Dilute to Hyper-concentrated Flow. Water 2021, 13, 379. https://doi.org/10.3390/w13030379
13. Chukwuemeka John; Jaan H. Pu; Manish Pandey; Prashanth R. Hanmaiahgari (2021) Sediment deposition within rainwater: Case study comparison of four different sites in Ikorodu, Nigeria, *Fluids* **2021**, *6*(3), 124; https://doi.org/10.3390/fluids6030124 .
14. Neelesh Soni, Debojit Sharma, Mustafa M. Rahman, Prashanth R. Hanmaiahgari, V. Mahendra Reddy, (2021) Mathematical Modeling of Solar Energy based Thermal Energy Storage for House Heating in Winter, Journal of Energy Storage, Volume 34,102203,ISSN 2352-152X,https://doi.org/10.1016/j.est.2020.102203.
15. Mahananda, M., Hanmaiahgari, P. R., Balachandar R., and Roussinova, V., (2021), Effects of Aspect Ratio on Higher-Order Moments, Conditional Statistics, TKE Budget and Anisotropy in Narrow Open Channel Flow, CJCE, 48(6), https://doi.org/10.1139/cjce-2019-0374
16. Jaan Pu, Manish Pandey, and Prashanth Hanmaiahgari, (2020), Analytical Modelling of Sidewall Turbulence Effect on Streamwise Velocity Profile using 2D Approach: A Comparison of Rectangular and Trapezoidal Open Channel Flows, Journal of Hydro-environment Research, 32,
17. Pal, Susonvan, Hanmaiahgari, P. R., and Lambert M. F., (2020), "Efficient Approach towards Application of Godunov Method to Hydraulic Transients" Journal of Hydroinformatics.
18. Maji, S.; Hanmaiahgari, P.R.; Balachandar, R.; Pu, J.H.; Ricardo, A.M.; Ferreira, R.M. (2020), A Review on Hydrodynamics of Free Surface Flows in Emergent Vegetated Channels. Water 2020, 12, 1218. https://doi.org/10.3390/w12041218
19. Jaan H.Pu, Awesar Hussain, Ya-kun Guo, Nikolaos Vardakastanis, Prashanth R.Hanmaiahgari, and Dennis Lama (2019),"Submerged flexible vegetation impact on open channel flow velocity distribution: An analytical modelling study on drag and friction, Water Science and Engineering Elsevier, Volume 12, Issue 2, Pages 121-128, https://doi.org/10.1016/j.wse.2019.06.003.

20. Hanmaiahgari, P.R., Kottam, R.R., and Kaushik, M. (2019) "Estimation and Examination of Linepack Pressures in Long Water Pipelines." Sadhana, Springer, 44(5), DOI: 10.1007/s12046-019-1081-5
21. Mahananda, Hanmaiahgari, Ojha, and Ram Balachandar, (2019) "A new analytical method for the velocity distribution in narrow open channel flow", Canadian Journal of Civil Engineering, 46(7), 657-668, http://dx.doi.org/10.1139/cjce-2018-0615
22. Minakshee Mahananda, Prashanth R. Hanmaiahgari, and Ram Balachandar, (2018) Effect of Aspect Ratio on Developing and Developed Narrow Open Channel Flow with Rough Bed, CJCE, 45(9): 780-794, https://doi.org/10.1139/cjce-2017-0458
23. Hanmaiahgari, P. R, Nooka Raju Gompa, Pal, D., and Jaan Hui Pu (2018), Numerical Modeling of the Sakuma Dam Reservoir Sedimentation, Natural Hazards, Springer. 91(3):1075–1096 https://doi.org/10.1007/s11069-018-3168-4
24. Jaan Hui Pu, Simon Tait,Yakun Guo, Yuefei Huang, and Prashanth Reddy Hanmaiahgari (2018), Dominant Features in Three-Dimensional Turbulence Structure: Comparison of Non-Uniform Accelerating and Decelerating Flows, 18(2) 395-416, Environmental Fluid Mechanics.
25. Khaple, S., Hanmaiahgari, P.R., Gaudio, R. et al. Acta Geophys. 65(5): 957-975, (2017) https://doi.org/10.1007/s11600-017-0084-z,
26. Maji, S., Pal, D., Hanmaiahgari, P.R. and Gupta, U.P., Hydrodynamics and turbulence in emergent and sparsely vegetated open channel flow, Environ Fluid Mech, 17(4):853–877, 2017, DOI 10.1007/s10652-017-9531-2,
27. Hanmaiahgari, P.R., Elkholy, M. & Riahi-Nezhad "Identification of partial blockages in pipelines using genetic algorithms", Sādhanā, 42(9), pp 1543–1556, (2017), DOI: 10.1007/s12046-017-0707-8
28. Shivakumar Khaple, Prashanth Reddy Hanmaiahgari, Subhasish Dey and Roberto Gaudio (2017), "Interference of an Upstream Pier on Local Scour at Downstream Piers," Acta Geophys. 65:29-46, DOI 10.1007/s11600-017-0004-2
29. Hanmaiahgari, P. R., Vesselina Roussinova, Ram Balachandar (2017) "Turbulence characteristics of flow in an open channel with temporally varying mobile bedforms", J. Hydrol. Hydromech., 65(1), 2017, 35-48, DOI: 10.1515/johh-2016-0044
30. S. Maji, D. Pal, P. R. Hanmaiahgari, and J. H. Pu, (2016) "Phenomenological Features of Turbulent Hydrodynamics in Sparsely Vegetated Open Channel Flow" accepted for publication in Journal of Applied Fluid Mechanics, 9(6), pp. 2865-2875.
31. H. Prashanth Reddy, and Ram Balachandar (2016) "Turbulence Characteristics of Flow over Non Equilibrium Three-Dimensional Mobile Dunes" 41(9), 1019-1037, (DOI:10.1007/s12046-016-0537-0).
32. Hanmaiahgari, P. R., (2015) Book Review of "Fluvial Hydrodynamics: Hydrodynamic and Sediment Transport Phenomena" Authored by Dr. Subhasish Dey, Springer Verlag, Berlin GeoPlanet: Earth and Planetary Sciences, 2014, 687 pp., £117, ISBN 978-3-642-19061-2, Water Management, ICE Proceedings. (available online) http://www.icevirtuallibrary.com/content/article/10.1680/wama.14.00153
33. H. Prashanth Reddy, Chaudhry, M. H., and Imran Jasmin, (2014) "Computation of Gradually Varied Flow in Compound Open Channel Networks", *Sadhana*, Springer, 39(6), 1523-1545 (DOI: 10.1007/s12046-014-0299-5).

34. Soumen Maji, Prashanth Reddy Hanmaiahgari and Subhasish Dey (2014), "Experimental studies of local scour in the pressurized OCF below a wooden log across the flow," *Sadhana*, Springer, 39(5), 1245-1257 (DOI: 10.1007/s12046-014-0267-0).
35. H. Prashanth Reddy, Silva-Araya, W. F., and Chaudhry, M. H., (2012) "Estimation of Decay Coefficients for Unsteady Friction for Instantaneous Acceleration Based Models," *Journal of Hydraulic Engineering,* ASCE, 138(3), 260-271.
36. H. Prashanth Reddy, Shankar Narasimhan, S. Murty Bhallamudi, S. Bairagi, (2011) "Leak detection in gas pipeline networks using an efficient state estimator - Part-II: Experimental and field verifications" *Computers and Chemical Engineering*, Elsevier, 35(4), 662-670.
37. H. Prashanth Reddy, Shankar Narasimhan, S. Murty Bhallamudi, S. Bairagi, (2011) "Leak detection in gas pipeline networks using an efficient state estimator - Part-I: Theory and simulations" *Computers and Chemical Engineering*, Elsevier, 35(4), 651-661.
38. Chaudhry, M. H. and H. Prashanth Reddy (2011)"Mathematical modeling of lake-tap flows," *Journal of Hydraulic Engineering,* ASCE, 137(5), 611-614.
39. H. Prashanth Reddy, Chaudhry, M. H., Mahapatra, P. K.,"Modeling of periodic flows in pipelines by transfer function method," *Journal of Hydraulic Research*, IAHR, Vol. 48, No. 2 (2010), pp. 255–259.
40. H. Prashanth Reddy, Narasimhan, S., Bhallamudi, S. M., (2006), "Simulation and state estimation of transient flow in gas pipeline networks using a transfer function model," *Ind. Eng. Chem. Res*, American Chemical Society, Vol. 45(11), 3853-3863.
41. H. Prashanth Reddy, and S. Murty Bhallamudi, (2006), Closure to "Gradually Varied Flow Computation in Cyclic Looped Channel Networks," *J. of Irrig. and drain. Engg.*, ASCE, 132:189-189.
42. H. Prashanth Reddy, Bhallamudi, S. M., (2004), "Gradually varied flow computation in cyclic looped open channel networks," *J. of Irrig. and drain. Engg.*, ASCE, 130(5), 425-431.

Invited Book Chapters

1. Ram Balachandar and H. Prashanth Reddy (2011). Bed Forms and Flow Mechanisms Associated with Dunes, Sediment Transport - Flow and Morphological Processes, Faruk Bhuiyan (Ed.), ISBN: 978-953- 307-374-3, InTech, Available from: http://www.intechopen.com/articles/show/title/bed-forms-andflow-mechanisms-associated-with-dunes
2. Ram Balachandar and H. Prashanth Reddy (2013). Scour Caused by Wall Jets, Sediment Transport Processes and Their Modelling Applications, Dr. Andrew Manning (Ed.), ISBN: 978-953-51-1039-2, InTech, DOI: 10.5772/54909. Available from: http://www.intechopen.com/books/sediment-transport-processes-and-their-modelling-applications/scour-caused-by-wall-jets
3. Debasish Pal, Bapon Halder and Prashanth R. Hanmaiahgari, (2017) "Comparison of Turbulent Hydrodynamics with and without Emergent and Sparse Vegetation Patch in Free Surface Flow", Development of Water Resources in India, Editors: Garg, Vikas, Singh, Vijay, Raj, Vijay (Eds.) Water Science and Technology Library, Springer, ISBN 978-3-319-55125-8.
4. Debasish Pal, Minakshee Mahananda, Prashanth R. Hanmaiahgari and Mrinal Kaushik, (2017), "Experimental Investigation of Turbulent Hydrodynamics in Developing Narrow Open Channel Flow", Development of Water Resources in India, Editors: Garg, Vikas,

Singh, Vijay, Raj, Vijay (Eds.) Water Science and Technology Library, Springer, ISBN 978-3-319-55125-8.

5. Minakshee Mahananda, Prashanth R. Hanmaiahgari, (2017),"Lateral variation of turbulent features in developing and developed narrow open channel flow" , Development of Water Resources in India, Editors: Garg, Vikas, Singh, Vijay, Raj, Vijay (Eds.) Water Science and Technology Library, Springer, ISBN 978-3-319-55125-8.
6. Soumen Maji, Susovan Pal, Prashanth Reddy Hanmaiahgari and Vikas Garg, (2017), "Turbulent hydrodynamics along lateral direction in and around emergent and sparse vegetated open channel flow" , Development of Water Resources in India, Editors: Garg, Vikas, Singh, Vijay, Raj, Vijay (Eds.) Water Science and Technology Library, Springer, ISBN 978-3-319-55125-8.
7. Soumen Maji, Nooka Raju Gompa, Prashanth Reddy Hanmaiahgari and Vikas Garg, (2017), "Turbulent structures in open channel flow with emergent and sparse vegetation" , Development of Water Resources in India, Editors: Garg, Vikas, Singh, Vijay, Raj, Vijay (Eds.) Water Science and Technology Library, Springer, ISBN 978-3-319-55125-8.
8. Khaple, Shivakumar., Hanmaiahgari, P. R., and Dey, S. (2018). "Time variation of scour at downstream pier for two piers in tandem arrangement." 36th International School of Hydraulics, Monika Barbara Kalinowska, Magdalena Maria Mrokowska, Paweł Mariusz Rowiński (Eds.) GeoPlanet: Earth and Planetary Sciences, Springer
9. Jaan Hui Pu, Yakun Guo, Md. Arafatur Rahman, and Prashanth Reddy Hanmaiahgari (2018), Environmental Application Using Depth-Averaged Model: A Case of Waste-Water Management at Southern Singapore Sea: Application for Coral Reef Protection, "Water Management: social and technological perspective", Edited by Iqbal M. Mujtaba, Thokozani Majozi and Mutiu Kolade Amosa, CRC Press.
10. Soumen Maji, Hanmaiahgari, P. R., Ram Balachandar, Vesselina Roussinova, (2018), "Turbulent Flow Characteristics in Interior and Wake Region of Emergent and Sparse Vegetation", Recent Research on Engineering Geology and Geological Engineering, published by Springer. https://www.springerprofessional.de/en/turbulent-flow-characteristics-in-interior-and-wake-region-of-em/16257376#pay-wall
11. Chitrangini Sahu and Prashanth Reddy Hanmaiahgari (2021). "Scaling of Open Channel Flow Velocities in Emergent, Sparse and Rigid Vegetation Patch with Rough Bed interior of the Patch" Hydrological Extremes, Editors: Ashish Pandey, S.K.Mishra, M.L.Kansal, R.D.Singh and V.P.Singh (Eds.) Water Science and Technology Library, Springer.

International conferences

1. H. Prashanth Reddy, Vesselina Roussinova, Ram Balachandar and Tirupati Bolisetti (2012) "Flow and Turbulence Characteristics of Open Channel Flow Over a Mobile Bed" The biennial CSME International Congress: CSME 2012 Symposium on Fluid Dynamics and Applications, June 03-06, 2012, Manitoba
2. H. Prashanth Reddy, Vesselina Roussinova, Ram Balachandar and Tirupati Bolisetti (2012) "Higher order moments of velocity fluctuations in an open channel flow with Mobile Bed" Sep 5-7, IAHR River Flow 2012, San Jose, Costarica
3. H. Prashanth Reddy, Vesselina Roussinova, Ram Balachandar (2012) "Experimental studies on developing dunes" ASCE HMEM2012, Snowbird, Utah, Aug 12-15

4. H. Prashanth Reddy, Narasimhan, S., Bhallamudi, S. M. “Leak detection in gas pipeline networks using GLR method and Transfer function based dynamic simulation model”, International interdisciplinary conference on sustainable technologies for environmental protection (ICSTEP 2006), Coimbatore, India, Jan 7-9, 2006, page no 86.
5. H Prashanth Reddy, Stratification of Heterogeneous Mixtures, Science and Scientist 2013, SIT, Bhubaneshwar, 1 day (2013)
6. Shiva Kumar Khaple, Prashanth Reddy Hanmaiahgari and Subhasish Dey, (2014) "Studies on the effect of an upstream pier as a scour protection measure of a downstream bridge pier," Sep 2-6, IAHR River Flow 2014, the 7th International Conference on Fluvial Hydraulics at EPFL Lausanne, Switzerland.
7. H. Prashanth Reddy and Soumen Maji, (2014), "Eddy Viscosity Turbulence Model for Incompressible Fluid Flow in Closed Conduits," Proceedings of the 19th IAHR-APD Congress 2014, September 21-24, Hanoi, Vietnam.
8. Minakshee Mahananda and Prashanth Reddy Hanmaiahgari (2015), "Turbulence Characteristics of Free Surface Flow over Mobile Bedforms Using Eularian Approach," Proceedings of the 20th Hydro-2015 International Conference, December 17-19, 2015, Roorkee, India.
9. Maji, S., Pal, D., Mahananda, M. and Hanmaiahgari, P.R., (2016), "Comparison of turbulent features through upstream, interior and downstream of sparsely vegetated open channel turbulent flow," 8th IAHR River Flow 2016, pp 2297-2303, July 12-15, St. Louis, Mo, USA.
10. Pal, D., Soumen Maji, Hanmaiahgari, P. R., Minh Duc Bui, and Peter Rutschmann (2016), "Turbulent hydrodynamics through cross-sections at upstream, interior and downstream of sparse vegetation patch in open channel flow," IAHR 13th International Symposium on River Sedimentation (ISRS), September 19 – 22, 2016, Stuttgart, Germany.
11. Minakshee Mahananda and Prashanth Reddy Hanmaiahgari (2017), “Lateral Variation Of Turbulence In Developing Narrow Open Channel Flow” 37th IAHR World Congress, 13-18, August, 2017, Kuala Lumpur, Malaysia.
12. Khaple, S., Hanmaiahgari, P. R., and Dey, S. (2017). “Time variation of scour at downstream pier for two piers in tandem arrangement.” *Proc.*, *ISH 2017*, 23-26 May 2017, Jachranka, Poland.
13. Soumen Maji, Prashanth Reddy Hanmaiahgari, Experimental Studies of Local Scour below a Partially Submerged Cylinder across the Free Surface Flow, Proceedings of ICTACEM 2014, Dec 2014.
14. Minakshee Mahananda and Prashanth Reddy Hanmaiahgari, "Turbulence Characteristics of Free Surface Flow over Mobile Bedforms Using Eularian Approach," Proceedings of the 20th Hydro-2015 International Conference, Roorkee, India, December 17-19, 2015.
15. H Prashanth Reddy, Stratification Of Heterogeneous Mixtures, Science and Scientist 2013, PB Sidhartha, College of Arts and Science College, Vijayawada, 1 day, 2015.
16. Chitrangini Sahu and Prashanth Reddy Hanmaiahgari (2017), "Scaling of open channel flow velocities in emergent, sparse and rigid vegetation patch with rough bed interior of the patch," STIWM-2018 held at IIT Roorkee during 16-19 February, 2018.
17. Minakshee Mahananda and Prashanth Reddy Hanmaiahgari (2018), “Effect of aspect ratio on higher order moments of velocity fluctuations in hydraulically rough open channel flow” IAHR River Flow 2018, Lyon-Villeurbanne (France) – 5-8th September 2018

18. Soumen Maji, Hanmaiahgari, P. R., (2018), "Bulk scaling of flow characteristics in the interior of sparse, emergent and rigid vegetation patch," IAHR River Flow 2018, Lyon-Villeurbanne (France) – 5-8th September 2018
19. Soumen Maji, Hanmaiahgari, P. R., Ram Balachandar, Vesselina Roussinova, (2018), Turbulent Flow Characteristics in Interior and Wake Region of Emergent and Sparse Vegetation Patch: Proceedings of the 2nd GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Cairo, Egypt, Nov 24-28, 2018 – The Official International Congress of the Soil-Structure Interaction Group in Egypt (SSIGE).
20. Minakshee Mahananda, Hanmaiahgari, P. R., Ram Balachandar (2019), Effects of Reynolds Number and Aspect Ratio on the Turbulence Characteristics in Developing and Fully Developed Flow Over a Rough Bed, Proceedings of the 3rd GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Cairo, Egypt, Nov 10-14, 2019 – The Official International Congress of the Soil-Structure Interaction Group in Egypt (SSIGE)
21. Kalpana Devi, Prashanth Reddy Hanmaiahgari (2020), " Experimental Analysis of Turbulent Open Channel Flow in the Near-Wake Region of a Surface-Mounted Horizontal Circular Cylinder," The 10th Conference on Fluvial Hydraulics under the auspices of IAHR, River Flow 2020, held online, from 6 to 10 July 2020.
22. Kalpana Devi, Prashanth Reddy Hanmaiahgari (2021), " Reynolds Shear Stress Distribution in Recirculation Region of a Circular Cylinder," EGU General Assembly 2021, held online, from 19 to 23 April 2021.
23. Srinivas Balaji, Sandeep Kumar, Prashanth Reddy Hanmaiahgari (2022), “Design of Air Vessel Using Simple Method and Deep Learning,” First IITM International Conference on Circular Economy for Sustainable Water Management (SuWaM 2022), held online, Mar 23-25, 2022

National conferences

1. H. Prashanth Reddy, Narasimhan, S., Bhallamudi, S., M., “Dynamic analysis of gas pipeline networks using Transfer function model”, National conference on Advances in Water Engineering for Sustainable Development (NCAWESD-2005), IIT Madras, India, May 16-17, 2005, pp. 215-222.
2. Debasish Pal, Bapon Halder and Prashanth R. Hanmaiahgari, “Comparison of Turbulent Hydrodynamics With And Without Emergent And Sparse Vegetation Patch in Free Surface Flow”, National Conference on Water Resources & Hydropower 17th – 18th June, 2016, UPES Dehradun, India, pp 53.
   https://drive.google.com/open?id=0B4OavArzJYsRdG1qTmNWa1B5WU0
3. Debasish Pal, Minakshee Mahananda, Prashanth R. Hanmaiahgari and Mrinal Kaushik, “Experimental Investigation of Turbulent Hydrodynamics in Developing Narrow Open Channel Flow”, National Conference On Water Resources & Hydropower 17th – 18th June, 2016, UPES Dehradun, India, pp 64.
   https://drive.google.com/open?id=0B4OavArzJYsRdG1qTmNWa1B5WU0

4. Amgoth Ashok and Prashanth Reddy Hanmaiahgari (2017), "Scaling of wall shear stresses in emergent, sparse and rigid vegetated open channel flows with rough bed interior of the vegetation patch", National Conference on Water Resources Management in Coastal Regions organized by NIH during December 8-9, page 117, Kakinada, India.

5. Chitrangini Sahu and Prashanth Reddy Hanmaiahgari (2017), "Scaling of open channel flow velocities in emergent, sparse and rigid vegetation patch with rough bed interior of the patch," National Conference on Water Resources Management in Coastal Regions organized by NIH during December 8-9, page 118, Kakinada, India.

Open access papers (non SCI)

1. Kaushik, M. and Hanmaiahgari, P. R., (2015), "Under expansion level effects on circular and elliptic sonic jets propagation," American Journal of Fluid Dynamics, 5(3A): 12-18, DOI: 10.5923/s.ajfd.201501.02. (open access)

Student Guidance

Post-Doctoral Fellow

1. Dr. Debasish Pal (PhD) worked as a post-doctoral fellow during 10/1/2016 to 17/6/2016 (5 months). He was funded from my ISIRD project. Presently, he is working as a post-doctoral fellow at Pillar of Engineering Systems and Design (ESD), Singapore University of Technology and Design, Singapore 487372

PhD

1. Mr. Siva Kumar Kaple (Guide: Subhasish Dey, Co-guide: H Prashanth Reddy) Topic: Effects of an Upstream Bridge Pier on Scour at Downstream Bridge Piers and Scour Countermeasure (**completed**)
2. Mr. Soumen Maji (Guide: H Prashanth Reddy) Topic: Characterization of Hydrodynamics in Emergent and Sparse Vegetated Open Channel Flow (**completed**)
3. Ms. Meenakshi Mahananda (Guide: H Prashanth Reddy) Topic: Hydrodynamics in Narrow Open Chanel Flow (**completed**)
4. Mr. Susovan Pal (Guide: H Prashanth Reddy) Topic: Investigation of Efficient and Accurate CFD Schemes for Transient Pipe Flow (ongoing)
5. Ms. Kalpana Devi (Guide: H Prashanth Reddy), Topic: Experimental Hydraulics.
6. Mr. Kokkiligadda Gangadhar (Guide: Anirban Dhar, Co-guide: Dr. H. Prashanth Reddy) (ongoing)
7. Mr. Sandeep Kumar (Guide: H Prashanth Reddy, Coguide: Dr VM Chowdary), Topic: Experimental Hydraulics.
8. Mr. Sanny Kumar (Guide: Dr. Harendra Singh, Professor, Centre for Water Engineering and management, Central University of Jharkhand, Co-guide: Dr. H. Prashanth Reddy)
9. Mr.Ajith Kumar (Guide: H Prashanth Reddy, Co-guide: Dr. Martin Lambert)

MTech

1. Ms. Priyanka Goutham (Guide: Subhasish Dey, Co-guide: **H Prashanth Reddy**) Topic: Mutual Interference of twin bridge piers on local scouring (completed 2014)
2. Mr. G. Raju (Guide: H. Prashanth Reddy) Topic: Modeling of reservoir sedimentation (completed 2015)
3. Mr. Bapan Halder (Guide: H. Prashanth Reddy) Topic: Experimental modeling of vegetation in in open channel flow. (completed 2016)

4. Ms. Chitrangini Sahoo 15CE61R05 (Guide: Dr. H Prashanth Reddy) Topic: Scaling of turbulence features along the centerline of emergent, highly sparse and rigid vegetation patch with rough bed interior of the patch (completed 2017)
5. Mr. Amgothu Ashok 15CE61R01 (Guide: Dr. H Prashanth Reddy) Topic: Scaling of turbulence features in lateral direction at half length of emergent, sparse and rigid vegetation patch with rough bed interior (completed 2017)
6. Ms. Sunanda Raj (Guide: Dr. Harendra Singh, Professor, Centre for Water Engineering and management, Central University of Jharkhand, Co-guide: **Dr. H Prashanth Reddy**) Topic: Experimental modeling of hydraulically rough open channel flows. (completed)
7. Mr. Kumar Daksh (Guide: Dr. Harendra Singh, Professor, Centre for Water Engineering and management, Central University of Jharkhand, Co-guide: **Dr. H Prashanth Reddy**) (completed)
8. Ms. Varsha Kumari (Guide: Dr. Harendra Singh, Professor, Centre for Water Engineering and management, Central University of Jharkhand, Co-guide: **Dr. H Prashanth Reddy**) (completed)
9. Mr. Ravishankar 17CE61R04 (Guide: **Dr. H Prashanth Reddy**) Topic: Surface Roughness Effects on Turbulent Flow around a Cylinder across Channel bed (completed 2020)
10. Mr. Vishal Satpute 18CE61R14 (Guide: **Dr. H Prashanth Reddy**) Topic: Quantification of turbulence above mobile bedforms (completed 2020)
11. Ms. Sneha Badri (Guide: **Dr. H Prashanth Reddy**) Topic: Comparison of analytical, numerical and approximate methods for designing air chamber and surge tank (completed 2021)
12. Mr Shivam (2022) (Guide: **Dr. H Prashanth Reddy**) Topic: Wake Hydrodynamics Of Wall Mounted Horizontal Pipe Without And With Spoiler
13. Mr Dev Tripathi (2022) (Guide: **Dr. H Prashanth Reddy**) Topic: Management Of Stormwater Drainage System For An Urban Residential Area
14. Vanshika Sharma (2023)
15. Ajmail (2023)

BTech

1. Jaiswar Pradeep Kumar (10CE10022), Topic: Analysis of unsteady flow in a fire water network (completed)
2. Thogaru Manideep (10CE10059) Topic: Modeling of unsteady friction in closed conduits using convolution based methods (completed in 2014)
3. Daisy Kumari (10CE10016) Topic: Modeling of unsteady friction in closed conduits using convolution based methods (completed in 2014)
4. Hitesh Meena (11CE10018) Topic: Experiments in open channel flows (completed in 2015)
5. Mahendra Meena (11CE33002) Topic: Experiments in open channel flows (completed in 2015)
6. Piyush Singh (12CE30012), Topic, Numerical Modeling of Open Channel Flows (completed in 2016)
7. Ms. Gudipudi Lakshmi (13CE10018) Topic: Numerical Modeling of Steady State Flow in Water Distribution Networks (completed in 2017)
8. Mr. Sulabh Biswas (13CE10050) Topic: Numerical Modeling of Unsteady State Flow in Water Distribution Networks (completed in 2017)

9. G Chandan (14CE10017) Topic: Computational fluid dynamics modelling of lid driven cavity (on going)
10. Bhalerao Parimal Chandrakant (14CE30012) Topic: Simulation of flow past a cylinder using CFD Methodology (on going)
11. K.Chs.Sai Unmesh, (14CE10026) Topic: CFD modeling of fully developed laminar pipe flow and comparing it with analytic solutions (on going)
12. Mr Sagardeep Debbarma (13CE10033) Topic: Determination of friction coefficient in transition regime for pipe flow (on going)
13. Mr. Heera Singh (15CE31009), Topic: Equation for estimating friction factor in transition flow regime.
14. Mr. Dhairya Solanki, (16CE10055), Topic: Development of Risk Assessment Method for Natural Gas Pipelines.
15. Mr. Mukesh Kumar Singh, (16CE10030), Topic: Numerically Solving St Venant Equations Using FD methods.
16. Shubham Raj (17CE10054), Topic: Design of Water Distribution Systems Using EPANET.
17. B Srinivas Iyengar (18CE36004), Topic: Prediction of Hydrodynamics of a Cylinder's wake using Ensemble Machine Learning Algorithms
18. Ankit (18CE10012)
19. Akhil Chand

Summer/Winter Interns (under graduates)

1. Mr. Parag Kumar Baro, NIT Silchar (2016 Summer)
2. Ms. Gayatri Sahoo, VSSUT, Burla (2016 Summer)
3. Ms. Mahe Farkhar, IIT KGP (2016 Summer)
4. Ms. Gudipudi Lakshmi, IIT KGP (2016 Summer)
5. Mr. Rahul Kumar Meena, IIT KGP (2016 Dec – 2017 January)
6. Mr. Pasuparthi Shubha Tarun, IIT Roorkee (2017 Summer)
7. Mr. Chinna maddileti bontha (16ME10015) IIT KGP (2019 May – 2019 July)
8. Mr. Sukhdev Jaipal (17CE10058) IIT KGP (2020 May – 2020 July)

Technical report

1. Narasimhan, S., Bhallamudi, S. M., Reddy, H. P., (2006), *Development of Leak Detection Methodology in Gas Pipeline Networks,* Submitted to GAIL (India) Ltd. 166 pages.

PhD theses examined

1. "Investigation of Leachate Migration and its Mitigation using Biobarrier: Simulation and Experiments", Submitted by Dr S Kanmani for the award of PhD degree in the Department of Civil Engineering, National Institute of Technology, Tirichirapalli, India.
2. "Routing of suspended sediment through gravel bed rivers" submitted by Mr. Nilav Kumar Karna for the award of PhD degree in the Department of Civil Engineering, Indian Institute of Technology Roorkee, India.

3. “Effect Of Infiltration On Sediment Transport In Irrigated Channels” submitted by Mr. Kapil Rohilla for the award of PhD degree in the Department of Civil Engineering, Indian Institute of Technology Roorkee, India.
4. *Modeling and control of an irrigation canal* by Ms. Jailakshmi Menon under the guidance of Dr. B.V. Mudgal, The Department of Civil Engineering, Anna University, Chennai 600025
5. *Pipe Wall Condition Assessment and Leak Detection using Paired Pressure Sensors with Hydraulic Transient Analysis* by Ms. He Shi for the award of PhD degree, Faculty of Engineering, Computer and Mathematical Sciences, School of Civil, Environmental and Mining Engineering, The University of Adelaide. (2019)
6. *Studies on heavy metal removal from acid mine drainage by active and passive methods* by R. Venkatsaravanan for the award of PhD degree, Department of Civil Engineering, NIT Tiruchirappalli, India, 620015 (2020)
7. *Sustainable and resilient integrated urban stormwater management – a case study* by L R N PRASAD RENTACHINTALA for the award of PhD degree, Department of Civil Engineering, University college of Engineering, Andhra University, Visakhapatnam, India, (2022)
8. *Development of Models for Network Optimization, Aquifer Geometry and Groundwater Management using Numerical and Soft Computing Tools* by **Mr. K Mahesh Kumar (CN032200495/Ph.D/Exams/2022)** for the award of PhD degree, Department of Civil Engineering, University college of Engineering, Osmania University, Hyderabad, India, (2022)
9. *An integrated approach to study the changes in hydrology and sediment deposition in a river delta due to the construction of a dam* by Mr Beeram Satya Narayana Reddy for the award of PhD degree, Department of Civil Engineering, NIT Calicut, Calicut, India (2022).

Sponsored Research Projects

1. Title : Experimental modelling of flow characteristics in and around emergent vegetation patches (ISIRD project)
   Principal Investigator: H Prashanth Reddy
   Sponsor: SRIC, IIT Kharagpur
   Budget: Rs 2640000.00
2. Title : Experimental Studies on Controlled Shock-Boundary Layer Interactions in Hypersonic Intake
   Principal Investigator: Dr. Mrinal Kaushik; Co-Investigator: Dr. H Prashanth Reddy
   Sponsor: SERB, DST
   Budget: Rs 1800000.00

Few research proposals were already submitted to DST, MoWR and ARDB of government of India for possible funding.

Consultancy Projects

1. Estimation of Design Basis Flood and Safe Grade Elevation for RR Site **Nuclear Power Corporation of India Limited**

2. Wetting of SURGE ANALYSIS AND DESIGN OF SURGE PROTECTION SYSTEM for KADAN MICRO PRESSURIZED IRRIGATION SYSTEM (completed) Rs Budget: 284000

3. Surge analysis and surge mitigation report to design suitable surge protection system for rising main of Aulliya Medium Irrigation Project District Khandwa (M.P,) under Government of Madhya Pradesh Water Resources Department, Indore (M.P) (completed)
   Budget: Rs 354000.00

4. Technical Assistance for Design of Drainage System for Greenfield City Greenfield City Project LLP (completed)
   Budget: Rs 500000.00

5. Survey of municipal area for integrated drainage development scheme of Basirhat Municipality (proposal submitted)

6. Survey of municipal area for integrated drainage development of Kharagpur Municipality (proposal submitted)

7. Investigating Meshless Particle based Approaches in Fluid Structure Interaction (FSI) Applications PANINIAN INDIA PRIVATE LIMITED

8. Evaluation of Risk Assessment of GAIL Pipeline in NCR SONAR BHARAT ENVIRONMENT AND ECOLOGY PRIVATE LIMITED

Short term courses and workshops organized

1. Modelling of Fluvial Processes, June 08 2014 to June 18, 2014, (Principal Coordinator: Subhasish Dey, Co-Coordinator: H Prashanth Reddy) at IIT Kharagpur, sponsored by CEC, IIT Kharagpur.
2. A short-term course titled “Hydraulic Transients in Water Conveyance Systems " was offered during Oct 07 -08, 2015. The fundamentals of hydraulic transients to assist the participants in learning the causes of surges in pipelines and how to protect the pipeline system will be taught in this course. (Principal Coordinator: Prashanth Reddy Hanmaiahgari) at IIT Kharagpur, sponsored by CEC, IIT Kharagpur.
3. A workshop titled “Hydraulic Transients in Water Conveyance Systems " was offered during Feb 26 -27, 2016. The fundamentals of hydraulic transients to assist the participants in learning the causes of surges in pipelines and how to protect the pipeline system will be taught in this course. (Coordinator: Dr. Milind Rajurkar and Dr. Prashanth Reddy Hanmaiahgari) at SGGS Institute of Engineering and Technology, Vishnupuri, Nanded, sponsored under TEQUIP-II.

4. Short term course titled "Practical hydraulics: Applications in free surface and pressurized flows" under GIAN has been conducted during Feb 04-15, 2019. This course was taught by Dr Martin F Lambert (Foreign Faculty), Dr. Prashanth Reddy Hanmaiahgari (Principal co-ordinator) and Dr. Subhasish Dey (Co-coordinator).
5. A TEQIP 3 short term course titled "Fluvial Hydrodynamics and Thermo Fluids" was organized during Feb 04 -08, 2020 in the Department of Civil Engineering, IIT Kharagpur. The course provided an exposure to practical problems of hydrodynamics, hydraulic engineering and thermo fluids. Coordinators: Dr. H Prashanth Reddy, (Dept of Civil Engineering) and Dr Mahendra Vanteru (Dept of Mechanical Engineering)

Subjects taught

At University of South Carolina, Columbia, SC, USA

1. Introduction to water resources engineering laboratory (ECIV 362L-001-Spring-2008) (31 students).
2. Introduction to water resources engineering laboratory (ECIV 362L-001-Spring-2009) (32 students).

At IIT Kharagpur, India

• **UG Level:** Engineering drawing and computer graphics, hydraulics, design of hydraulic structures, introduction to hydraulic and water resources engineering, water resources engg. laboratory, and water resources engineering (theory).

• **PG Level:** Computer applications in free surface flow and applied hydrology, turbulent fluid flow, Viscous Fluid Flow, case studies on computational hydraulics and sediment transport, Hydropower, hydraulic and water resources engg. Laboratory.

Awards and Honors

1. Selected for DAAD IIT Faculty Exchange Program (2015), visited Technical University Munchen, Germany during June-July 2015.
2. Received International Travel Support Scheme Award from the Department of Science and Technology (DST), Govt. of India, for attending the IAHR Riverflow 2016 Conference held at St Louis, Mo, USA, Jul 2016.
3. Visiting Scholar at University of Windsor, Windsor, Canada (May-July 2017)
4. Visiting Scholar at University of Windsor, Windsor, Canada (Mar-April 2018)
5. Listed in Marquis Who's Who in the world (2010).
6. Best Researcher Award (2020), Type: National, Awarded By: VDGOOD Professional Association, Details: 9th International Scientist Awards on Engineering, Science and Medicine which is going to be held on 12 & 13-Sep-2020 in Trichy, India., Discipline: Engineering, Country: India
7. Our article titled "A Review on Hydrodynamics of Free Surface Flows in Emergent Vegetated Channels" was selected as the "Editor's Choice Articles" by MDPI Water for year 2020
8. Our article titled " An Overview of the Numerical Approaches to Water Hammer Modelling:

The Ongoing Quest for Practical and Accurate Numerical Approaches" was selected as the "Editor's Choice Articles" by MDPI Water for year 2021.

9. Member of advisory board, 39th IAHR World Congress, 2022, From Snow to Sea, 19-24 June 2022, GRANADA, SPAIN

Member of Academic Committees

1. Member of BoS of the Department of Water Engineering and Management, Central University Jharkhand

Invited Talks

1. "Unsteady flows in Pipelines" at IIT Hyderabad, Date: Dec 27, 2013
2. "Unsteady flows in pipelines" at NIT Warangal, Date: Dec 20, 2013
3. "Fundamental experiments in sedimentation" at SIT Bhubaneswar, Date: Dec 08, 2013
4. "Sedimentation Experiments", 2nd International conference, Science and Scientist 2014, Nov 28-29, 2014, PB Siddhartha College of Arts and Science, Vijayawada, AP, India, page 60.
5. "A Review of Turbulence Characteristics of Free Surface Flows in Vegetated Channels," July 19, 2015, Hydraulic and Water Resources Engineering Laboratory, Technical University Munchen, Munich, Germany.
6. Taught three lectures on “gradually varied flow computation in channel networks” online during 18-19 February 2021 for Masters students of USC, Columbia, USA

Lectures Delivered in Workshops

1. 3-day workshop on "Surge Analysis and Design of Water Conveyance Systems in Lift Irrigation Schemes", Organized by NIT Warangal, India, during June 18-20, 2014.
2. 6-day short-term course on “Advances in Numerical Techniques for Hydraulics, Hydrology and Water Resources Management-I (ANST-HHWM-I)” during Feb. 23 – Feb. 28 2015, Organized by school of water resources, IIT Kharagpur, India.
3. Lecture delivered on "Turbulence characteristics of free surface flow over mobile bedforms" in the short term course "ISWT/GIAN Hydrodynamics of Riverbed Erosion and Scour at Structures” during Dec 07-18, 2015, Coordinator: Prof. Subhasish Dey, Department of Civil Engineering, IIT Kharagpur, India.
4. Lecture delivered on "Similitude in Open Channel Flows" in the short term course "ISWT/GIAN Advances in Hydraulic Modeling” during Dec 05-16, 2016, Coordinator: Prof. Subhasish Dey, Department of Civil Engineering, IIT Kharagpur, India.
5. Two lectures delivered on sediment transport in the AICTE QIP short term course "Hydrodynamics and Sediment Transport in Unsteady Flows” during Oct 14-20, 2019, Coordinators: Dr. Mohd Saud Afzal and Prof. Subhasish Dey, Department of Civil Engineering, IIT Kharagpur, India
6. Three lectures delivered on "Rain water harvesting" in the training of Nirman Sahayaks from various Gram Panchayats organized by GKCIET, Malda and funded by ISGPP-II, Panchayats and Rural Development Department, Government of West Bengal on February 07, 2020

7. A lecture is delivered on “River Hydraulics-addressing scour and sediment problems” for 90 minutes in Five-day Faculty Development Program (ATAL AICTE) on “GIS & Remote Sensing” from 04-08 January 2021 conducted by Department of Civil Engineering, University College of Engineering JNTUK Kakinada.
8. A key note lecture is delivered on “Hydrodynamics of Free Surface Flows in Emergent Vegetated Channels” for 90 minutes in Intl. Conf on River Corridor Research and Management, IIT Jammu, dated 26th February 2021. This conference is funded by the “Shastri Indo-Canadian Institute (SICI) Golden Jubilee Conference and LectureSeriesGrant”.
9. A key note lecture titled “Practical Hydraulics-Applications in Free Surface and Pressurized Flows” is delivered on Dec 21, 2021, Dept. of CIVIL ENGINEERING, Gayatri Vidya Parishad College of Engineering and GVP-Prof. V. Lakshmikantham Institute for Advanced Studies (GVP-LIAS), in association with International Federation of Nonlinear Analysts, is organizing the 4th International Conference on Recent Advances in Mathematical Sciences and Applications (RAMSA-21) from 21st to 24th December, 2021 on Virtual Mode.

Training programs attended

1. I have undergone an intensive training program on “surge analysis program (SAP2) for water transmission pipelines” taught by Prof. K. Sridharan during August 27-31, 2007 conducted by center for continuing education, Indian Institute of Science, Bangalore, India.
2. I have attended a 3 day short course on “Numerical methods for hyperbolic equations with applications to shallow water flows” taught by Prof. Eleuterio F. Toro (July 13-15, 2009) organized by the National Center for Computational Hydroscience and Engineering, The university of Mississippi, Oxford, MS 38677, USA.

Complete Details of Associated Consultancy Projects

1. **Optimization of tailrace channel of Priyadarshini, Jurala (located in Andhra Pradesh, India) hydro-electric power plant to maximize available head.**

   Details: Used a mathematical model for water surface profiles in tail race channels (computer code developed by self) for design of the tail race channel so that the power production in the hydro-electric power plant could be increased while the cost of tail race channel is minimized. This project was sponsored by the Andhra Pradesh Power Generation Corporation (APGENCO), Hyderabad. Dr. B.S. Murty was the principal coordinator.

2. **Feasibility study (using mathematical modeling) of minihydel power plant on the upstream of Upper Seeleru hydro power plant (located in Andhra Pradesh, India).**

   Details: Used a mathematical model for unsteady flow in an open channels (computer code developed by self) in order to determine the effect of constructing a mini-hydel power plant on the temporal and spatial variation of water levels in the power canal and the corresponding safety issues. This project was sponsored by the Andhra Pradesh

Power Generation Corporation (APGENCO), Hyderabad. Dr. B.S. Murty was the principal coordinator.

3. **Associated with development of software for online leak detection in gas pipelines at IIT Madras. (programmed in 'C' language with objected oriented features)**

   Details: *Leak detection software is developed to (i) detect whether a leak has occurred (ii) determine the time instant the leak has occurred, (iii) determine the pipe location (branch as well as position) where it has occurred and (iv) estimate the magnitude of the leak, provided pressure, flow and temperature measurements at different locations in a pipeline. Leak detection methodology is based on using a "**state estimator**" in a Generalized Likelihood Ratio (GLR) test framework. I was responsible for developing the code, conducting the laboratory experiments for validating the code, installing the code in the within the SCADA of the GAIL (India) Limited, and helping the GAIL (India) to conduct the field tests to evaluate the performance. Dr. Shankar Narasimhan (PI) and Dr. B.S. Murty (CI) were the coordinators of this research project* sponsored by the GAIL (India) Limited.

4. **Designed water supply, storm sewer and sanitary sewer systems for several residential townships. EPANET is used to design of water supply system and HouStorm is used for the design of storm water system.**

   Details: *Designed blue water system, grey water system, sanitary sewer system, storm sewer system, lake design, pipeline between two lakes, landscape irrigation system and energy dissipater for storm drain into lake as part of infrastructure development for 56.59 acres Sobha City project for approximately 9000 residents coming up at Thrissur, Kerala, India.*
   Designed blue water system, grey water system, sanitary sewer system storm sewer system, water supply system for swimming pools, and landscape irrigation system as part of infrastructure development of 40 acres Sobha LifeStyle project for 170 luxury villas coming up at Bangalore, India.
   Designed sewage treatment plant (preliminary design to obtain clearance from union ministry of environment), blue water system, grey water system, sanitary sewer system, storm sewer system, and landscape irrigation system as part of infrastructure development for 30 acres Sheetavali project for 120 luxury villas coming up at Chikmangalore, India.

5. **Hydraulic and hydrologic studies of the drainage channel between Bellandur and Varthur lakes to prevent flooding at the site of Prestige Tech Park II in Bangalore, Karnataka, India.**

Details: The stream connecting Bellandur Lake to Varthur Lake flows between Phase I and the planned Phase of II of the Prestige Tech park. The *stream carrying sewage as dry weather flow and storm water during rains passes through the project site. This stream carries storm water from the upstream side of the watershed from Bellandur Lake towards Varthur Lake. INVICUS has been entrusted with the job of conducting relevant studies and hydraulic design of the drainage system to prevent flooding at site. Following are the objectives of the study. (1). Evaluation of runoff quantity through a hydrological analysis of available rainfall data spanning from 1901 through 2005. (2) Evaluating and improving the passage of the stream through the Prestige Tech Park property.*

Maximum rainfall recorded in 24hours since 50 years for the catchment drained by the channel = 160 mm. From DAD curve for 1 day storm for area under consideration, maximum rainfall intensity, I= 2.67 cm/hr, runoff coefficient, C= 0.8, area of catchment, A=6.48 km^2, maximum flood Q = 0.26CAI = 35.8 m^3/sec, increasing by 10%, design flood Q = 38.5 m^3 /sec.
The proposed channel modification at Prestige tech park II to provide a safe passage of the flood to the downstream is modeled using HEC-RAS software. The aim of this hydraulic modeling is to compute steady state gradually varied flow profiles along the channel. The channel modification is 590 .0 m long. The entire channel is analyzed for mixed flow with upstream and downstream normal depth boundary conditions of S = 0.001 m/m. The channel is provided with 0.001 m/m slope except at stilling basins. The manning's coefficient is taken as 0.015 for concrete channel and 0.05 in stilling basin because of the basin blocks. The width of the channel, depth and freeboard are considered as 8.0 m, 2.2 m (including free board) and 0.5 m respectively. The channel is provided with transitions at the downstream end and upstream end for smoothly guiding the flow between natural channel and proposed 8.0 m wide channel. The proposed channel is provided with trash rack at the upstream end followed by silt trap. Two stilling basins are provided to dissipate the energy and to bring the flow velocity to non-scouring velocity.

Associate Editor for following International Journal
Journal of The Institution of Engineers (India): Series A Civil, Architectural, Environmental and Agricultural Engineering
Editorial Board Member for following journal
Current Indian Science, published by Bentham Science

Reviewer for following International Journals

1. ASCE Journal of Hydraulic Engineering
2. Journal of Hydraulic Research (IAHR)
3. Acta Geophysica
4. Journal of Hydrology (Elsevier)
5. Canadian Journal of Civil Engineering
6. ASCE Journal of Irrigation and Drainage Engineering
7. Environmental Fluid Mechanics, Springer
8. Journal of Earth System Science, Springer

9. Flow Measurement and Instrumentation, Elsevier
10. Current Science
11. ISH Journal of Hydraulic Engineering, Taylor and Francis
12. Journal of Hydrology and Hydromechanics
13. Sadhana
14. Applied Mathematical Modeling
15. Marine Georesources & Geotechnology
16. Irrigation and Drainage, Wiley
17. Water management
18. Ecohydraulics
19. Journal of Pressure Vessel Technology
20. Applied Mathematical Modeling
21. Physics of Fluids
22. Scientific Reports

    Many more

Memberships

1. Passed Engineer-In-Training (FE) NCEES South Carolina Board, USA (Certification No. 17990, Certification Date: 01/28/2011)
2. Member of IAHR (new ID 21131, old ID I-1585),
3. Member of ASCE (ID 984981)
4. Life member of Indian Water Works Association
5. Member of EGU

Software Proficiency related to Water Resources Engineering

HEC-RAS: The HEC-RAS model is developed by the Hydrologic Engineering Centre, U S Army Corps of Engineers, Davis, California. It is a 1D numerical model for the computation of water surface profiles in steady and unsteady flow in a non-prismatic channel together with gradually varied profile, rapidly varied profile and mixed profile. Recently, HEC-RAS was enhanced for the analysis of water quality and the computation of sediment transport together with the movable boundary condition.

Delft3D: Delft3D is an integrated modelling framework which can carry out 2D and 3D computations for coastal, river and estuaries. It can perform flow simulations of sediment transport and morphological changes resulting from meteorological factors

WEPP: Water Erosion Prediction Project (WEPP) is a physically based process model, intended to provide continuous spatially distributed watershed simulations with minimum calibration. The model incorporates the fundamentals of hydrology, including plant sciences, soil physics, and erosion mechanics.

HEC-HMS: It is hydrological modelling software for precipitation-runoff simulations. It has different channel routing methods implemented. HEC-HMS computes downstream hydrograph given an upstream hydrograph as a boundary condition.

FVCOM: FVCOM is an unstructured-grid, finite-volume, free-surface, 3-D primitive equation, coastal ocean circulation and sediment transport model developed by UMASSD-WHOI jointly.

GIS: Application of GIS, Digital mapping, Spatial coordinate systems, Hydrologic terrain analysis, River and watershed networks, Flood hydrology modeling and flood plain mapping, Integration of time series and geospatial data

Sunrise Pipenet vision 1.5: Pipenet is an extremely powerful software tool for modelling fluid flow, transient state, surge analysis and water hammer in pipes and pipe networks.

EPANET: Epanet is a software tool to design and size new water infrastructure, retrofit existing aging infrastructure, optimize operations of tanks and pumps, reduce energy usage, investigate water quality problems, and prepare for emergencies.

Computer proficiency

Languages: proficient in C and C++, FORTRAN 90, Python and MATLAB;

I declare that the information and facts stated herein are true and correct to the best of my knowledge and belief.

Prashanth Reddy Hanmaiahgari
Date: Apr 10, 2022