CURRICULUM VITAE

Tavpritesh Sethi
Associate Professor,
Department of Computational Biology,
IIIT-Delhi, India
http://tavlab.iiitd.edu.in/

RESEARCH AREA: Machine Learning and Artificial Intelligence for Medicine and Public Health

EDUCATION

2014   PhD in Biotechnology (Bioinformatics) CSIR-IGIB, New

Delhi, India 2005 - 2008 Diamond Jubilee Research Fellow, CSIR-IGIB, New

Delhi, India 2004 M.B.B.S., Government Medical College Amritsar

PROFESSIONAL APPOINTMENTS

2021 – Present   Associate Professor, Department of Computational Biology, IIIT-Delhi,

India 2020 – Present   Head, Center of Excellence in Healthcare, IIIT-Delhi, New Delhi, India

2017 – 2019   Visiting Assistant Professor, Biomedical Informatics, Stanford University,

USA 2016 – 2021   Assistant Professor, Department of Computational Biology, IIIT-Delhi,

India 2015 – Present   Wellcome Trust/DBT India Alliance Fellow, AIIMS, New Delhi, India

2013 – 2015   Quick Hire Scientist, CSIR-Fourth Paradigm Institute, Bangalore, India

2011 – 2013   Senior Research Officer, All India Institute of Medical Sciences, New Delhi, India

RESEARCH GRANTS & PROJECTS

	Grant	Role	Funding Agency
1	Center of Excellence in Healthcare	PI	Delhi Knowledge Development Foundation, Govt of Delhi

2	Predicting Sepsis in ICUs using Clinical and Big-data.	PI	Wellcome Trust UK/DBT India Alliance
3	Delhi Science and Technology Cluster (Sub-Theme Rapid	PI	Office of Principal Scientific Advisor, Govt. of India

	Epidemic Response with AI/ML)		
5	Distilling a gene signature for tuberculosis using machine learning and generative artificial intelligence	PI	Department of Biotechnology, Govt. of India
6	AI for Social Good: Learning interventions for mitigating the spread of HIV infection in female sex workers using causal and interventional modeling.	PI	Google
7	Operationalizing the Nutrition Label Approach to Data Quality through Machine Learning	PI	Population Council
8	Indo-Israel project on longitudinal big-data mining for intensive care settings.	Co-PI	Department of Science and Technology, Govt. of India
9	Sepsis Consortium Project	Co-PI	Department of Biotechnology, Govt. of India

SCIENTOMETRICS

Google Scholar as of January 23, 2023:-

Total citations	1445
h-index	17
i10-index	22

AWARDS AND HONORS

1. Wellcome Trust/DBT India Alliance Early Career Award, 2015-2021

2. TechPlus Media CXO Health Excellence Award, 2020

3. Kavli Fellowship (since 2013)

4. MIT-India Tech Young Innovator Award (under 35), 2013

5. Royal Society Diversity Travel Award for Commonwealth Science Conference, 2016

PEER REVIEWED ARTICLES

1. Awasthi, R., Rakholia, V., Agrawal, S., Dhingra, L. S., Nagori, A., Kaur, H., & **Sethi, T.** (2022). Estimating the impact of health systems factors on antimicrobial resistance in priority pathogens. Journal of Global Antimicrobial Resistance, *30*, 133–142.

2. Vats, V, Nagori, A, Singh, P, Dutt, R, Bandhey, H, Wason, M, Lodha, R, **Sethi, T.** Early Prediction of Hemodynamic Shock in the Intensive Care Units with Deep Learning on Thermal Videos. Front. Physiol., 11 July 2022 Sec. Computational Physiology and Medicine.

3. Pandey, R, Gautam, V, Pal, R, Bandhey, H, Dhingra, L, Misra, V, Sharma, H, Jain, C, Bhagat, K, Patel, L, …, **Sethi, T**. "A machine learning application for raising wash awareness in the times of covid-19 pandemic". Scientific reports 2022; 12(1):1–10.

4. Awasthi, R, Guliani, K, Khan, S, Vashishtha, A, Gill, M, Bhatt, A, Nagori, A,

Gupta, A, Kumaraguru, P, **Sethi, T**. "Vacsim: Learning effective strategies for covid-19 vaccine distribution using reinforcement learning". Intelligence-Based Medicine 2022:100060.

5. Pal, R, Chopra, H, Awasthi, R, Bandhey, H, Nagori, A, Gulati, A, Kumaraguru, P, **Sethi, T**. "Predicting emerging themes in rapidly expanding COVID-19 literature with dynamic word embedding networks and machine learning". JMIR (Forthcoming).

6. Chopra, H, Vashishtha, A, Pal, R, Tyagi, A, **Sethi, T**. "Mining Trends of COVID-19 Vaccine Beliefs on Twitter with Lexical Embeddings". JMIR Infodemiology (Forthcoming)

7. Nagpal, S, Pal, R, Tyagi, A, Tripathi, S, Nagori, A, Ahmad, S, Mishra, H, Malhotra, R, Kutum, R, **Sethi, T**. "Genomic Surveillance of COVID-19 Variants with Language Models and Machine Learning". Frontiers in genetics 2022; 13.

8. Arora, G, Joshi, J, Mandal, R, Shrivastava, N, Virmani, R, **Sethi, T**. "Artificial intelligence in surveillance, diagnosis, drug discovery and vaccine development against COVID-19". Pathogens 2021; 10(8):1048.

9. Tamuli, D, Kaur, M, **Sethi, T**, Singh, A, Faruq, M, Jaryal, A, Srivastava, A, Kumaran, S, Deepak, K, others. "Cortical and subcortical brain area atrophy in SCA1 and SCA2 patients in India: the structural MRI underpinnings and correlative insight among the atrophy and disease attributes". Neurology India 2021; 69(5):1318.

10. Talukder, A, Chakrabarti, P, Chaudhuri, B, **Sethi, T**, Lodha, R, Haas, R2AI&7D Model of Resistomics to Counter the Accelerating Antibiotic Resistance and the Medical Climate Crisis. In International Conference on Big Data Analytics 2021 (pp. 44–53).

11. Singh, A, Mehan, P, Sharma, D, Pandey, R, **Sethi, T**, Kumaraguru, P. "COVID-19 Mask Usage and Social Distancing in Social Media Images: Large-scale Deep Learning Analysis". JMIR Public Health and Surveillance 2022; 8(1):e26868.

12. Alle, S, Kanakan, A, Siddiqui, S, Garg, A, Karthikeyan, A, Mehta, P, Mishra, N, Chattopadhyay, P, Devi, P, Waghdhare, S, …, **Sethi, T**, Pandey, R.others. "COVID-19 Risk Stratification and Mortality Prediction in Hospitalized Indian Patients: Harnessing clinical data for public health benefits". PloS one 2022; 17(3):e0264785.

13. Aggrawal, P, Jolly, B, Gulati, A, Sethi, A, Kumaraguru, P, **Sethi, T**. "Psychometric analysis and coupling of emotions between state bulletins and twitter in India during COVID-19 infodemic". Frontiers in Communication 2021; 6:695913.

14. **Sethi T**, S. Maheshwari, A. Mittal, S. Chugh. Learning to Address Health Inequality in the United States with a Bayesian Decision Network. Proceedings of the AAAI Conference on Artificial Intelligence 33, 710-717. DOI: https://doi.org/10.1609/aaai.v33i01.3301710

15. Jha, I, Awasthi, R, Kumar, A, Kumar, V, **Sethi, T**. "Learning the mental health impact of COVID-19 in the United States with explainable artificial intelligence: observational study". JMIR mental health 2021; 8(4):e25097.

16. L Dawman, A Mukherjee, **T Sethi**, A Agrawal, SK Kabra, R Lodha. Role of impulse oscillometry in assessing asthma control in children. Indian Pediatrics, vol. 57, no. 2, p. 119-123, February 2020. Number of Pages: 5.

17. E. Kurnat-Thoma, …, **T. Sethi**, et. Al. Recent Advances in Systems and Network Medicine: Meeting Report from the First International Conference in Systems and Network Medicine. Systems Medicine, vol. 3, no. 1, p. 22-35, February 2020, doi: https://doi.org/10.1089/sysm.2020.0001.

18. N. Itzhak, E. Lior, A. Nagori, M. Schvetz, **T. Sethi** and R. Moskovitch. Predicting Acute Hypertensive Episodes Continuously in ICU Data. International Conference on Artificial Intelligence in Medicine, pp. 392-402. Springer, Cham, 2020.

19. Awasthi, R, Patel, P, Joshi, V, Karkal, S, **Sethi, T**. Learning Explainable Interventions to Mitigate HIV Transmission in Sex Workers Across Five States in India. Neural Information Processing Systems ML4D 2020 Workshop. Proceedings of NeurIPS ML4D2020.

20. Lesa Dawman, Aparna Mukherjee, **Tavpritesh Sethi**, Anurag Agrawal, SK Kabra, Rakesh Lodha. Role of impulse oscillometry in assessing asthma control in children. Indian Pediatr. 2020;57(2):119–123

21. Aditya Nagori, Lovedeep Singh Dhingra, Ambika Bhatnagar, Rakesh Lodha, **Tavpritesh Sethi***. Predicting Hemodynamic Shock from Thermal Images using Machine Learning. Sci Rep. 2019 Jan 14;9(1):91.doi:

10.1038/s41598-018-36586-8.

22. **Tavpritesh Sethi***, Anant Mittal, Shubham Maheshwari, Samarth Chugh. Learning to Address Health Inequality in the United States with a Bayesian Decision Network. Proceedings of the Thirty-third AAAI conference in Artificial Intelligence, https://doi.org/10.1609/aaai.v33i01.3301710

23. **Tavpritesh Sethi***, Shubham Maheshwari, Aditya Nagori, Rakesh Lodha. Stewarding antibiotic stewardship in intensive care units with Bayesian artificial intelligence. Wellcome Open Res. 2018 Jun 18. https://wellcomeopenresearch.org/articles/3-73.Sindhu Sivanandan, **Tavpritesh Sethi**, Rakesh Lodha, Anu Thukral, Jeeva M Sankar, Ramesh Agarwal, et al. Target Oxygen Saturation Among Preterm Neonates on Supplemental Oxygen Therapy: A Quality Improvement Study. Indian Pediatr. 2018;55(9):793–6.

24. Kriti Kaushik, Ambily Sivadas, Shamsudheen K Vellarikkal, Ankit Verma, Rijith Jayarajan, Satyaprakash Pandey S, **Tavpritesh Sethi**, Souvik Maiti, Vinod Scaria, Sridhar Sivasubbu. RNA secondary structure profiling in zebrafish reveals unique regulatory features. BMC Genomics. 2018;19(1):147.

25. Kriti Sikri, Priyanka Duggal, Chanchal Kumar, Sakshi Dhingra Batra, Atul Vashist, Ashima Bhaskar, Kritika Tripathi, **Tavpritesh Sethi,** Amit Singh, Jaya Sivaswami Tyagi: Multifaceted remodeling by vitamin C boosts sensitivity of Mycobacterium tuberculosis subpopulations to combination treatment by anti-tubercular drugs. DOI:10.1016/j.redox.2017.12.020

26. Anirban Sinha, Koundinya Desiraju, Kunal Aggarwal, Rintu Kutum, Siddhartha Roy, Rakesh Lodha,

S. K. Kabra, Balaram Ghosh, **Tavpritesh Sethi***, Anurag Agrawal*: Exhaled breath condensate metabolome clusters for endotype discovery in asthma. Journal of Translational Medicine 12/2017; 15(1)., DOI:10.1186/s12967-017-1365-7 ***Co-corresponding author**

27. Pradeep Tiwari[#], Rintu Kutum[#], **Tavpritesh Sethi**[#], Ankita Shrivastava, Bhushan Girase, Shilpi Aggarwal, Rutuja Patil, Dhiraj Agarwal, Pramod Gautam, Anurag Agrawal, Debasis Dash, Saurabh Ghosh, Sanjay Juvekar, Mitali Mukerji, Bhavana Prasher: Recapitulation of Ayurveda constitution types by machine learning of phenotypic traits**.** PLoS ONE 10/2017;

12(10):e0185380., DOI:10.1371/journal.pone.0185380 #**Joint first author**

28. Saransh Jain, Saurabh Kedia, **Tavpritesh Sethi**, Sawan Bopanna, Dawesh Prakash Yadav, Sandeep Goyal, Rajesh Padhan, Pratap Mouli Venigalla, Peush Sahni, Nihar Ranjan Dash, Sujoy Pal, Govind Makharia, Simon P L Travis, Vineet Ahuja: Predictors of long-term outcomes in patients with acute severe colitis: A Northern Indian cohort study. Journal of Gastroenterology and Hepatology 08/2017;, DOI:10.1111/jgh.13921

29. **Tavpritesh Sethi**, Nigam H. Shah: Pharmacovigilance Using Textual Data: The Need to Go Deeper and Wider into the Con(text). Drug Safety 08/2017; 40(6)., DOI:10.1007/s40264-017- 0585-3

30. Saransh Jain, Saurabh Kedia, **Tavpritesh Sethi**, Sawan Bopanna, Dawesh Yadav, Sandeep Goyal, Pratap Mouli Venigalla, Peush Sahni, Nihar R. Dash, Sujoy Pal, Govind K. Makharia, Simon

    P. Travis, Vineet Ahuja: Predictors of Long-Term Outcomes in Patients with Acute Severe Ulcerative Colitis: A Northern Indian Cohort Study. Gastroenterology 04/2017; 152(5):S372., DOI:10.1016/S0016-5085(17)31492-0

31. Ambika Bhatnagar, Aditya Nagori, Richard Fletcher, Rakesh Lodha, **Tavpritesh Sethi***: Leveraging Thermal Patterns in Children for Telemedicine: Role of Affordable Imagers, Smartphones and Data-analytics. Proceedings of the Special Collection on EGovernment Innovations in India - ICEGOV 17**.;** 03/2017, DOI:10.1145/3047273.3047376

32. **Tavpritesh Sethi***#, Aditya Nagori, Ambika Bhatnagar, Priyanka Gupta, Richard Fletcher, Rakesh Lodha: Validating the Tele-diagnostic Potential of Affordable Thermography in a Big-data Data- enabled ICU. Proceedings of the Special Collection on EGovernment Innovations in India - ICEGOV

    17.; 03/2017, DOI:10.1145/3055219.3055234

33. Mohit Singla, Meenakshi Kar, **Tavpritesh Sethi**, Sushil K. Kabra, Rakesh Lodha, Anmol Chandele, Guruprasad R. Medigeshi: Immune Response to Dengue Virus Infection in Pediatric Patients in New Delhi, India—Association of Viremia, Inflammatory Mediators and Monocytes with Disease Severity**.** PLoS Neglected Tropical Diseases 03/2016; 10(3):e0004497., DOI:10.1371/journal.pntd.0004497

34. Abhimanyu, Mridula Bose, Mandira Varma-Basil, Ashima Jain, **Tavpritesh**

Sethi, Pradeep Kumar Tiwari, Anurag Agrawal, Jayant Nagesh Banavaliker, Kumar Tapas Bhowmick: Establishment of Elevated Serum Levels of IL-10, IL-8 and TNF-β as Potential Peripheral Blood Biomarkers in Tubercular Lymphadenitis: A Prospective Observational Cohort Study. PLoS ONE 01/2016; 11(1):e0145576., DOI:10.1371/journal.pone.0145576

35. Sundeep Salvi, Komalkirti Apte, Sapna Madas, MBBS Monica Barne, Sushmeeta Chhowala, **Tavpritesh Sethi**, Kunal Aggarwal, Anurag Agrawal, Jaideep Gogtay: Symptoms and medical conditions in 204 912 patients visiting primary health-care practitioners in India: a 1-day point prevalence study (the POSEIDON study). The Lancet Global Health 12/2015; 3(12):e776–e784., DOI:10.1016/S2214-109X(15)00152-7

36. Dinesh Raj, Rakesh Lodha, Aparna Mukherjee, **Tavpritesh Sethi**, Anurag Agrawal, Sushil Kumar Kabra: Fractional Exhaled Nitric Oxide (FENO) in Children with Acute Exacerbation of Asthma. Indian pediatrics 09/2013; 51(2)., DOI:10.1007/s13312-014-0351-x

Book chapters

1.   **Tavpritesh Sethi**, Anushtha Kalia, Arjun Sharma, Aditya Nagori. Interpretable artificial intelligence: Closing the adoption gap in healthcare, in Artificial Intelligence in Precision Health (Academic Press)

2.   **Tavpritesh Sethi.** *Big Data to Big Knowledge for Next Generation Medicine: A Data Science Roadmap*. Guide to Big Data Applications, 05/2018: pages 371-399; , ISBN: 978-3-319- 53816-7, DOI:10.1007/978-3-319-53817-4_14

3.   **Tavpritesh Sethi**, Anurag Agrawal. *Pulmonary Function Testing in Chronic Obstructive Pulmonary Disease*, in Textbook of Pulmonary and Critical Care Medicine (Jaypee Publishers)

ESTEEM INDICATORS

Publications	29 peer reviewed publications; 9 papers in review; 3 book chapters
PhD Supervision	5 as principal supervisor (ongoing at IIIT-Delhi), 1 as secondary advisor
Editorial boards	4 (Plos One, Scientific Reports, Journal of Genetics, Systems Medicine, Systems

Medicine)

Invited talks, panels and interviews

15+ Invited talks including Keynotes
and TEDx Talks

1. TEDx AIIMS, The Vitals. https://www.ted.com/tedx/events/19974
2. TEDx MAIT, Delhi, Question Everything https://www.ted.com/tedx/events/33722
3. Plenary session talk, World Healthcare Conference 2021, April 15-16, 2021
4. Invited Speaker, AICTE Sponsored Virtual STTP Organized by KJSIEIT, Mumbai, January, 2021
5. Invited Speaker at MIT Vaccine For All Conference, Dec 11, 2020, https://pandemic.mit.edu/
6. Invited Speaker, 75 Years of Central Drug Research Institute, Lucknow Webinar Series.
7. Invited Speaker, Fighting pandemics with Artificial Intelligence, Gargi College, New Delhi, 2020
8. Keynote Speaker: LSZ Impact, The Cause of Health, Zurich Technopark, Switzerland, February 3, 2020. Weblink.
9. Invited Speaker at Stanford Presence Summit on Artificial Intelligence in Medicine: Inclusion and Equity, June 20, 2019. Weblink
10. Invited Speaker at Symposium on Computational Integration of Multi-omic Data, ZMB, Kiel, Germany, 17-18 June, 2019. Weblink
11. Invited Speaker and Workshop Presenter on *End-to-end Decision-learning in Clinical and Public Health Datasets with Bayesian Artificial Intelligence* at AMIA Clinical Informatics Conference, April 30-May 2, Atlanta, Georgia. Weblink,
12. Conference Co-chair and Invited Speaker at First International Conference in Systems and Network Medicine: Applications of Systems Science and Thinking to Biomedicine Georgetown University Medical Center Washington DC, USA. September 11-13, 2019 Weblink
13. Invited Speaker at the 2nd Conference of European Association of Systems Medicine, Utrecht Netherlands (Nov 7-9, 2018) Weblink
14. Invited Speaker at EMBO-India Symposium on Big-data in Biomedicine, New Delhi (February, 2018)
15. Invited Speaker at Workshop on Machine Learning Applications, South Asian University, New Delhi, April 2016
16. Invited Speaker at Workshop on Machine Learning in Bioinformatics and drug-discovery, Bhaskaracharya College of Applied Sciences, University of Delhi, April 2016
17. Speaker at Joint Workshop on Systems Biology of Antimicrobial Resistance organized in Delhi by Indian Council of Medical Research and National Institute of Allergy and Infectious Diseases, NIH, USA. January 20-21, 2016.

Memberships and expert groups

- Technical Innovation Group Member: Delhi Govt. Response to COVID-19

- Standing Committee Member: U.S. - India Artificial Intelligence (USIAI) Initiative, Indo-US Science and Technology Forum (IUSSTF)

- Technical Advisory Group Member: National Data Quality Forum (ICMR-NIMS-BMGF)

- Regional Leader (Australasia Region): International Association of Systems Medicine
- Editorial Board Member: Systems Medicine (regional editor from Australasia)

- Expert member for DBT and DST grants reviewing committees evaluating AI/ML and Data Science applications in healthcare.

COURSES TAUGHT

1. Practical Bioinformatics (Core Course, Computer Science and Biological Sciences Undergaduate Program, IIIT-Delhi)

2. Computing for Medicine (Elective Course, Computational Biology and Computer Science, IIIT-Delhi)

3. Healthcare Innovations and Entrepreurship Essentials (Elective Course, Computational Biology and Social Sciences and Humanities, IIIT-Delhi)

4. Nonlinear Dynamics and Modeling in Biological Systems (Teaching Assistant, PhD Coursework, CSIR-IGIB.

SERVICE TO THE COMMUNITY AND THE PROFESSION

2021 - present	Steering Committee Member, Delhi Cluster, DRIIV, https://driiv.iitd.ac.in
2020	Convener, Digital Health Theme of RIISE 2020, IIIT-Delhi.
2019	Conference Co-chair, First International Conference in Systems and Network Medicine, Georgetown University Medical Center, USA
2019	Convener, Digital Delhi Conclave, Theme Digital Health, IIIT-Delhi.
2018 - Present	Editorial Board Member Journal of Genetics
2018 - Present	Academic Editor, Scientific Reports
2017 - Present	Academic Editor, PlosOne
2018 - Present	Program Committee for IEEE International Conference on Health Informatics
2013 - Present	Reviewer for Journal of Translational Medicine, Drug Safety, PlosOne, Scientific Reports, Frontiers Public Health