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| Macintosh HD:Users:tapangandhi:Desktop:TKG copy.png  **Tapan Kumar Gandhi (Ph.D.) *FNAE, SMIEEE***  Associate Professor, Department of Electrical Engineering  Indian Institute of Technology Delhi  Cadence Chair Professor in Artificial Intelligence & Automation  Convener, Computer Technology  Chairperson, Project Prakash Charitable Trust  Adjunct Faculty, School of AIDE, IIT Jodhpur  Email: [tgandhi@ee.iitd.ac.in](mailto:tgandhi@ee.iitd.ac.in), Ph. : 011-26591153 | |
| **Education** | * Postdoctoral research associate, Dept. of Brain and Cognitive Sciences**, MIT, USA** (Research Advisor: Prof. Pawan Sinha, Deptt. of Brain and Cognitive Sciences, MIT USA) * Ph.D.: 2007-2011, (Biomedical Engineering) IIT Delhi jointly with MIT USA **(MIT PhD. Fellowship)**   ***Thesis title*: Behavioral & Neurophysiological Correlates of Object Representation and Evidence of Neural Plasticity** (Research Advisor: Prof. Pawan Sinha, Deptt. of Brain and Cognitive Sciences, **MIT USA**; Prof. Sneh Anand, Deptt. of CBME, **IIT Delhi**)   * M.Tech.: 2004-2006, (Bioelectronics) Tezpur University, Assam   ***Thesis title: Electro-oculogram based multimode embedded controller to assist severely disabled***   * M.Sc.: 2001-2003, (Electronics) Sambalpur University, Odisha * B.Sc.: 1998-2001, (Physics), Fakir Mohan College, Odisha |
| **Professional**  **Experience** | * **(4 Years, 3months) Associate Professor:** March’ 2019- Till Date, EE, IIT Delhi, India * **(1 Year) Cadence Chair Professor** **in Artificial Intelligence:** March 2022-Till Date, EE, IIT Delhi, India * **(5 Years) Chairperson Project Prakash Charitable Trust:** 2018: Till Date, India * **(4 Years)** Asst. Professor: Apr’2015- Mar’ 2019, IIT Delhi, India * **(3 Years, 1 Months)** Post Doc: 2012-2015, BCS, MIT USA * **(~7 Months)** Research Associate: 2011-2012, SCEH, New Delhi * (1 Month) INSPIRE Faculty, DIPAS, DRDO   **(Total: 11 Years, 09 Months) (**upto June 2023**)** |
| **Thesis Supervision** | * Masters: 30 Completed * **Ph.D.: 9 Completed**, 13 Comprehensives Completed, 4 Synopsis Completed * **M.S.R.: 2 Completed and 1 Submitted** |
| **Projects & Consultancies**  **(PI: 476.5 Lakhs)**  **(Co-PI: 270 Lakhs)** | * PI: 6 Projects (635 Lakhs, Externally Funded), **2 Completed with outstanding Grade** * **PI: 4** Projects (51.5 Lakhs, Internally Funded) * **Co-PI:** 2 Projects (2500 Lakhs, 1 externally funded and 1 Consultancy from Samsung, 1 from DGGI, Govt. of India), Completed. |
| **Publications &**  **Patents** | * **Journal Papers:** Total: 74 (1 in ***Nature*** Neuroscience, 5 in ***PNAS,*** 1 article in **Science**, 1 in ***Current Biology***, 1 in ***Plos Biology*) (9 Papers>10 Impact Factor)** * **Conference Proceedings:** 70 International, 30 National * **Book Edited:** 3 * **Patents:** **3** Patents filed & **3** in Process |
| **Citation Record** | * Google Scholar Citations: 3557, h-index: 24, i10-index: 45   <https://scholar.google.co.in/citations?user=VyIA2PwAAAAJ&hl=en> |
| **Societal Impact** | * Providing Training/ dissemination of knowledge nearly 100 young scientists from India and Abroad every year on Brain Mapping & AI. This year, I organized only for budding women Scientist. * Providing sight restoration intervention and education to Visually Impaired. * Guiding and helping various University/ Colleges to boost their Research & Development |
| **New Courses Developed (3)** | (1) Computational Neuroscience, (2) Computational Perception and Cognition,  (3) Healthcare Technology |
| **Lab Development** | * Neurocomputing Laboratory (With high-end equipment from project funds),   Block-2, 305   * Perception Engineering Experimental Facility, Block-2, 326 |
| **Development/**  **Translation to**  **Technology**  **(Possible Startup)** | * Hand held IOT digital water quality analyzer ([www.cluix.in](http://www.cluix.in)) * WinV: Window to Vision tool (ML based vision enhancement tool) (https://winv.in/) * Portable VR based tool to diagnose eye movement Disorders (Under Trial at AIIMS New Delhi) * ‘**Nataraj**’ to Diagnose Epilepsy (Patent Filed), under clinical Trial at AIIMS. * ‘**Smart Shoes**’/Portable Plannter Pressure measurement system. * ‘Smart **Document Reader’** for low vision Individuals * **Ivin Device** for Precise Drug Delivery into Human Vitreous |
| **Impact/Contributions to**  Science, Society  and Engineering | * Refinement of **Nobel Prize Winning “Critical Period Hypothesis”** of sensory learning. * Contributed in understanding of Autism and possible qualitative diagnosis techniques. * **Biggest message to Society:** Treatment to curably blind humans shouldn’t be denied based on age. * **Instrumental in restoration of sight to more than 700 Blind Humans in India.** * Already provided and in process of refining the process of intelligent learning in machines. |
| **Administrative**  **Responsibility** | **Department Level:**   * Faculty in-charge for basic electrical engineering, Embedded UG lab since 2017 * Founded and in-charge of Neurocomputing Lab * Founded and in-charge of Perception Engineering Expt. Facility   **Institute Level:**   * + - Institute Representative in GATE/JAM/IIT JEE Exams     - Convenor for Institute of Eminence Strategic Planning, IIT Delhi     - Faculty for Behavioral training to IIT Delhi non-teaching staff     - Strategy Planning & Implementation Committee     - Brain science and Technology Workshop (TEQIP/CEP)/ Year since 2016     - Hosted two international students from Harvard University in my lab (GROW Fellowship), two from MIT.   **Outside Institute Level:**   * + - **Chairperson, Project Prakash Charitable Trust, New Delhi (Restoring sight and providing education to Visually Impaired) (**[***www.Prakashtrust.org***](http://www.Prakashtrust.org)**)**     - Adjunct Faculty, School of AI & Data Science, IIT Jodhpur     - Partner of Vision Projects, European Union     - Invited international committee member to review Vision Projects, European Union 2018     - Expert member in Early Career Award, TARE Scheme, SUPRA, SRG, CRG, NPDF, POWER (SERB), Neurotools, DBT, Govt. of India     - **Super Mentor, KIIT TBI and Innovation**     - Expert member, Selection committee, NBRC, Haryana     - Committee Member of KIIT-TBI NIDHI PRAYAS Project Screening, Bhubaneswar     - Expert Panel member to select Scientist in UNESCO MGIEP, New Delhi     - Industry Relevant Research and Development (IRRD) Workshop (SERB): 14.5 Lakhs     - Expert for Research Symposium, SGGSIE&T, Nanded     - Member in various expert & Research Committees, AIIMS New Delhi     - Involved in technology development, CoE, Neurodevelopmental Disorder, AIIMS     - Delivered ~ 150 invited Talks (including session chairs) in India and one each in Harvard U, Yale U (Generated US $ 20,000), Copenhagen U & U of Groningen     - **Active collaborations with AIIMS, ICGEB (MoU), NIMHANS, MIT, Harvard U, Yale U, U Groningen (MoU), NJIT USA** |
| **Awards and other**  **Professional activities** | * Faculty Fellow, iHUB DivyaSampark, IIT Roorkiee (from 9th Aug 2023) * Elected Fellow of Indian National Academy of Engineering (2022) * Cadence Chair Professor in Artificial Intelligence & Automation (2022-2027) * Fellow IETE * SRISTI: GYTI Award 2019 for artificial Biomarkers of Knee Osteoarthritis * Double Gold medals from Ex-President, Dr APJ Abdul Kalam (Topper of all topper in M.Sc.) * **NASI-Young Scientist Platinum Jubilee Award 2015** * INSPIRE Faculty (Engineering) Award **(Outstanding Grade)** * IIT Delhi Industry Day Award 2018,Open House Award, 2016,2017,2018 * INDICON 2015, 2016 Award & few other Research awards on international Platforms * Senior Member, IEEE * Few other Awards |
| **Media**  **Highlights** | * Research Highlights Published in The Hindu News Paper & Wall Street Journal * GEO magazine article, Germany(Dec 2017) * Coverage in **SCIENCE Magazine** (Featured article and also the cover page)   MIT & Harvard News Article, New York Times, Boston Globe etc. |
| **Extra-Curricular**  **Activities** | * Editor-in-Chief IETE Journal of Research * Member of IIT Delhi Football team * (Involved in Childhood blindness alleviation and providing education to these children for better integration to mainstream society. |

**PUBLICATIONS**

**Publications in peer-reviewed Journals (**8 Papers in **more than 10 Impact Factor** journal)

1. C. Ralekar, **T. K. Gandhi** and S. Chaudhury (2023). Collaborative Human Machine Attention Module for Character Recognition. *IEEE Trans. Artif. Intell.*,2023, doi: 10.1109/TAI.2023.3289167,Impact Factor: 6.95
2. T. Kaur and **T. K. Gandhi** (2023). Automated Diagnosis of Epileptic Seizures using EEG image  
   representations and Deep Learning, *Neuroscience Informatics.*, vol. X pp. YY–YY, 2023, Impact Factor: 2.86  **(Press)**
3. G. Pavani P., B. Biswal and **T. Gandhi** (2023). Simultaneous multiclass retinal lesion segmentation using fully automated RILBP-YNet in diabetic retinopathy. *Biomedical Signal Processing and Control, Elsevier,* Vol. 86, Part B, September 2023, 105205, ),Impact Factor: 5.076
4. R. S. Soans, R. J. Renken, R. Saxena, R. Tandon, F. W. Cornelissen, and **T. K. Gandhi** “A framework for the continuous evaluation of 3D Motion Perception in Virtual Reality,” *IEEE Trans. Biomed. Eng.,* doi: 10.1109/TBME.2023.3271288, 2023, Impact Factor: 4.75
5. C. A. Pedersini, A. Miller, N.P., and **T. K. Gandhi\***, “White Matter Plasticity Following Sight- Recovery in Congenitally Blind Patients,” *PNAS*, 2023, 120 (19) e2207025120, [doi.org/10.1073/pnas.22070251](https://doi.org/10.1073/pnas.2207025120), Impact Factor: 12.78
6. J. Maheswari, S.D. Joshi, **T. K. Gandhi**, "Analysing the Brain Networks corresponding to the Facial Contrast-Chimeras. *Perception,* 2023, *52*(6), 371–384. <https://doi.org/10.1177/03010066231169002>, Impact Factor: 1.9
7. R. Dev, S. Kumar, **T. K. Gandhi,** “Tracking Brain Transitions”, *IEEE Sensors Lett.*, 2023, vol. 7, no. 5, pp. 1-4, May 2023, Art no. 7002004, doi: 10.1109/LSENS.2023.3269672, Impact Factor: 3.04
8. C. B. Kumar, A.K. Mondal, M. Bhatia, B. K. Panigrahi, and **T. K. Gandhi**, “Self-Supervised Representation learning Based OSA detection method using single channel ECG signal,” *IEEE Trans. Instrum. Meas.*, 2023, vol. 72, pp. 1-15, 2023, Art no. 2511915, doi: 10.1109/TIM.2023.3261931, Impact Factor: 4.0
9. S. Gautam, **T. K. Gandhi**, and B. K. Panigrahi, “WMCP-EM: An integrated dehazing framework for visibility restoration in single image,” *Comput. Vis. Image Underst.*, vol. 229, p. 103648, 2023, Impact Factor: 3.8
10. P. Singh, **T. K. Gandh**i, and others, “Reorganization of resting-state brain network functional connectivity across human brain developmental stages,” *Brain Res.*, vol. 1800, p. 148196, 2023, Impact Factor: 3.2
11. D. Konar, S. Bhattacharyya, **T. K. Gandhi**, B. K. Panigrahi, and R. Jiang, “3D Quantum-inspired self-supervised tensor network for volumetric segmentation of medical images,” *IEEE Trans. Neural Networks Learn. Syst.*, doi: 10.1109/TNNLS.2023.3240238, 2023, Impact Factor: 14.26
12. P. Gupta, P. Shah, S. Shrestha, S. Gilad-Gutnick, S. Ganesh, **T. K. Gandhi**, and P. Sinha, “Vulnerability of facial attractiveness perception to early and multi-year visual deprivation,” *Dev. Sci.*, vol. 26, no. 1, p. e13258, 2023, Impact Factor: 5.01
13. S. Ahuja, B. K. Panigrahi, and **T. K. Gandhi**, “Enhanced performance of Dark-Nets for brain tumor classification and segmentation using colormap-based superpixel techniques,” *Mach. Learn. with Appl.*, vol. 7, p. 100212, 2022, Impact Factor: 6.7
14. R. S. Soans, R. J. Renken, R. Saxena, R. Tandon, **T. K. Gandhi**, and F. W. Cornelissen, “Exploring the potential of portable visual fields assessment using Virtual-Reality and eye movement based perimetry,” in *PERCEPTION,* 2022, vol. 51, p. 158, Impact Factor: 1.9
15. J. Maheshwari, S. D. Joshi, and **T. K. Gandhi**, “Real-Time Automated Epileptic Seizure Detection by analysing Time Varying High Spatial Frequency Oscillations,” *IEEE Trans. Instrum. Meas.*, 2022, Impact Factor: 4.0
16. R. Wadhawan and **T. K. Gandhi**, “Landmark-aware and Part-based Ensemble Transfer Learning Network for Static Facial Expression Recognition from images,” *IEEE Trans. Artif. Intell.*, 2022, Impact Factor: 6.95
17. T. Kaur and **T. K. Gandhi**, “Classifier Fusion for Detection of COVID-19 from CT Scans,” *Circuits, Syst. signal Process.*, pp. 1–18, 2022, Impact Factor: 2.31
18. E. Striem-Amit, S. Sen, N. Tong, X. Wang, **T. K. Gandhi**, V. Mahajan, S. Ben-Ami, S. Gilad-Gutnick, Y. Bi, and P. Sinha, “Individual differences of brain plasticity in early visual deprivation and sight restoration,” *J. Vis.*, vol. 22, no. 14, p. 3483, 2022, Impact Factor: 2.1
19. S. Ahuja, B. K. Panigrahi, N. Dey, A. Taneja, and **T. K. Gandhi**, “McS-Net: Multi-class Siamese network for severity of COVID-19 infection classification from lung CT scan slices,” *Appl. Soft Comput.*, vol. 131, p. 109683, 2022, Impact Factor: 8.263
20. G. Pavani, B. Biswal, and **T. K. Gandhi**, “Multistage DPIRef-Net: An effective network for semantic segmentation of arteries and veins from retinal surface,” *Neurosci. Informatics*, vol. 2, no. 4, p. 100074, 2022, Impact Factor: 4.08
21. P. Tripathi, M. A. Ansari, **T. K. Gandhi**, R. Mehrotra, M. B. Bin Heyat, F. Akhtar, C. C. Ukwuoma, A. Y. Muaad, Y. M. Kadah, M. A. Al-Antari, and others, “Ensemble Computational Intelligent for Insomnia Sleep Stage Detection via the Sleep ECG Signal,” *IEEE Access*, vol. 10, pp. 108710–108721, 2022. Impact Factor: 3.36
22. K. Lohia, R. S. Soans, D. Agarwal, R. Tandon, R. Saxena, and **T. K. Gandhi**, “Stereopsis following surgery in children with congenital and developmental cataracts: A systematic review and meta-analysis,” *Surv. Ophthalmol.*, 2022, Impact Factor: 6.197
23. A. Giri, L. Kumar, N. Kurwale, and **T. K. Gandhi**, “Anatomical harmonics basis based brain source localization with application to epilepsy,” *Sci. Rep.*, vol. 12, no. 1, p. 11240, 2022, Impact Factor: 4.996
24. P. Gupta, P. Shah, S. G. Gutnick, M. Vogelsang, L. Vogelsang, K. Tiwari, **T. K.Gandhi**, S. Ganesh, and P. Sinha, “Development of visual memory capacity following early-onset and extended blindness,” *Psychol. Sci.*, vol. 33, no. 6, pp. 847–858, 2022, Impact Factor: 7.09
25. R. Hafiz, **T. K. Gandhi**, S. Mishra, A. Prasad, V. Mahajan, X. Di, B. H. Natelson, and B. B. Biswal, “Higher Limbic and Basal Ganglia volumes in surviving COVID-negative patients and the relations to fatigue,” *Neuroimage: Reports*, vol. 2, no. 2, p. 100095, 2022, Impact Factor: 6.55
26. H. Padole, S. D. Joshi, and **T. K. Gandhi**, “Early Detection of Alzheimer’s Disease Using Graph Signal Processing and Deep Learning.,” *Intell. Autom. Soft Comput.*, vol. 31, no. 3, 2022, Impact Factor: 1.65
27. S. Gautam, **T. K. Gandhi**, and B. K. Panigrahi, “A Model-based dehazing scheme for unmanned aerial vehicle system using radiance boundary constraint and graph model,” *J. Vis. Commun. Image Represent.*, vol. 74, p. 102993, 2021, Impact Factor: 2.6
28. T. Kaur, **T. K. Gandhi**, and B. K. Panigrahi, “Automated Diagnosis of COVID-19 using Deep Features and Parameter Free BAT Optimization,” *IEEE J. Transl. Eng. Heal. Med.*, vol. 9, pp. 1–9, 2021, Impact Factor: 3.31
29. R. S. Soans, R. J. Renken, J. John, A. Bhongade, D. Raj, R. Saxena, R. Tandon, **T. K. Gandhi**, and F. W. Cornelissen, “Patients Prefer a Virtual Reality Approach Over a Similarly Performing Screen-Based Approach for Continuous Oculomotor-Based Screening of Glaucomatous and Neuro-Ophthalmological Visual Field Defects,” *Front. Neurosci.*, vol. 15, 2021, Impact Factor: 4.6
30. A. Giri, L. Kumar, and **T. K. Gandhi**, “Cortical Source Domain Based Motor Imagery and Motor Execution Framework for Enhanced Brain Computer Interface Applications,” *IEEE Sensors Lett.*, 2021, Impact Factor: 2.36
31. S. Azimi, R. Wadhawan, and **T. K. Gandhi**, “Intelligent Monitoring of Stress Induced by Water Deficiency in Plants Using Deep Learning,” *IEEE Trans. Instrum. Meas.*, vol. 70, pp. 1–13, 2021, Impact Factor: 3.6
32. S. Ahuja, B. K. Panigrahi, N. Dey, V. Rajinikanth, and **T. K. Gandhi**, “Deep transfer learning-based automated detection of COVID-19 from lung CT scan slices,” *Appl. Intell.*, vol. 51, no. 1, pp. 571–585, 2021, Impact Factor: 3.325
33. **T. K. Gandhi**, K. Tsourides, N. Singhal, A. Cardinaux, W. Jamal, D. Pantazis, M. Kjelgaard, and P. Sinha, “Autonomic and Electrophysiological Evidence for Reduced Auditory Habituation in Autism,” *J. Autism Dev. Disord.*, vol. 51, no. 7, pp. 2218–2228, 2021, Impact Factor: 3.4
34. J. Ye, P. Gupta, P. Shah, K. Tiwari, **T. K. Gandhi**, S. Ganesh, F. Phillips, D. Levi, F. Thorn, S. Diamond, and others, “Resilience of temporal processing to early and extended visual deprivation,” *Vision Res.*, vol. 186, pp. 80–86, 2021, Impact Factor: 2.53
35. G. P. Pappu, B. Biswal, **T. K. Gandhi**, and M. V. S. Sai Ram, “Classification of neovascularization on retinal images using extreme learning machine,” *Int. J. Imaging Syst. Technol.*, vol. 31, no. 3, pp. 1536–1550, 2021, Impact Factor: 1.9
36. T. Kaur, A. Diwakar, P. Mirpuri, M. Tripathi, P. S. Chandra, **T. K. Gandhi**, and others, “Artificial Intelligence in Epilepsy,” *Neurol. India*, vol. 69, no. 3, p. 560, 2021, Impact Factor: 2.7
37. S. Azimi and **T. K. Gandhi**, “3-D maximum likelihood estimation sample consensus for correspondence grouping in 3-D plant point cloud,” *IEEE Sensors Lett.*, vol. 5, no. 6, pp. 1–4, 2021, Impact Factor: 2.31
38. R. S. Soans, A. Grillini, R. Saxena, R. J. Renken, **T. K. Gandhi**, and F. W. Cornelissen, “Eye-movement--based assessment of the perceptual consequences of glaucomatous and neuro-ophthalmological visual field defects,” *Transl. Vis. Sci. Technol.*, vol. 10, no. 2, p. 1, 2021, Impact Factor: 2.3
39. S. Azimi, T. Kaur, and **T. K. Gandhi**, “A deep learning approach to measure stress level in plants due to nitrogen deficiency,” *Measurement*, vol. 173, p. 108650, 2021, Impact Factor: 5.131
40. T. Kaur and **T. K. Gandhi**, “Deep convolutional neural networks with transfer learning for automated brain image classification,” *Mach. Vis. Appl.*, vol. 31, no. 3, pp. 1–16, 2020, Impact Factor: 2.983
41. D. Konar, S. Bhattacharyya, **T. K. Gandhi**, and B. K. Panigrahi, “A quantum-inspired self-supervised network model for automatic segmentation of brain MR images,” *Appl. Soft Comput.*, vol. 93, p. 106348, 2020, Impact Factor: 8.263
42. J. Maheshwari, S. D. Joshi, and **T. K. Gandhi**, “Tracking the Transitions of Brain States: An Analytical Approach Using EEG,” *IEEE Trans. Neural Syst. Rehabil. Eng.*, vol. 28, no. 8, pp. 1742–1749, 2020, Impact Factor: 3.4
43. J. Maheshwari, M. Bhatia, P. Swami, **T. K. Gandhi**, and S. D. Joshi, “Impact of CPAP on LF Power, HF Power and LF--HF Ratio in Patients with Severe OSA During Split Night Study,” *Sleep Vigil.*, vol. 4, no. 1, pp. 23–28, 2020, Impact Factor: 2.29
44. S. Gautam, **T. K. Gandhi**, and B. K. Panigrahi, “An Improved Air-Light Estimation Scheme for Single Haze Images Using Color Constancy Prior,” *IEEE Signal Process. Lett.*, vol. 27, pp. 1695–1699, 2020, Impact Factor: 2.53
45. T. Kaur, **T. K. Gandhi**, G. S. Bisht, and I. Adhikari, “Prevalence of foot problems and its related associations in Intellectually Disable (Special Olympic) Indian population,” *Foot*, vol. 42, p. 101650, 2020, Impact Factor: 1.32
46. H. Padole, S. D. Joshi, and **T. K. Gandhi**, “Graph wavelet-based multilevel graph coarsening and its application in graph-CNN for alzheimer’s disease detection,” *IEEE Access*, vol. 8, pp. 60906–60917, 2020, Impact Factor: 4.1
47. A. Giri, L. Kumar, and **T. K. Gandhi**, “Brain Source Localization in Head Harmonics Domain,” *IEEE Trans. Instrum. Meas.*, vol. 70, pp. 1–10, 2020, Impact Factor: 4.0
48. G. Dey, A. Ganguli, B. Bhattacharjee, and **T. K. Gandhi**, “Electrical response-based technique for estimation of degree of moisture saturation in cement concrete and mortar in drying and wetting cycle,” *Constr. Build. Mater.*, vol. 262, p. 120855, 2020, Impact Factor: 4.41
49. P. Sinha, S. Crucilla, **T. K.Gandhi**, D. Rose, A. Singh, S. Ganesh, U. Mathur, and P. Bex, “Mechanisms underlying simultaneous brightness contrast: early and innate,” J. *Vision Res.*, vol. 173, pp. 41–49, 2020, Impact Factor: 2.53
50. T. Gupta, **T. K. Gandhi**, R. K. Gupta, and B. K. Panigrahi, “Classification of patients with tumor using MR FLAIR images,” *Pattern Recognit. Lett.*, vol. 139, pp. 112–117, 2020, Impact Factor: 1.99
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**Edited/Written Volumes**

1. **T. K. Gandhi**, D.Konar, B.Sen, K. Sharma, Advanced Computational Paradigms and Hybrid Intelligent Computing (2021), Springer Publishers.
2. **T. K. Gandhi**, S. Bhattacharyya, S. De, D. Konar, S. Dey, Advanced Machine Vision Paradigms for Medical Image Analysis (2020), Academic Press Inc.
3. S. Bhattacharyya, **T. K. Gandhi**, K. Sharma, P. Dutta. Advanced Computational and Communication Paradigms: Proceedings of International Conference on ICACCP 2017, Volume 1 ((Lecture Notes in Electrical Engineering), Springer Publishers.

**Consultancy and Sponsored Project Experience**

**Projects (PI)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Title** | **Funding Agency** | **Amount** | **Period** | **Name of PI and Co-PIs** |
| **1.** | Neurocomputing and Cognitive Intelligence. | MeitY | 231 Lakhs | May’20-Apr’23 | **T.K. Gandhi (Lead)**  J. Jayadeva |
| Abstract: Understanding neural mechanism in Human Brain and developing technology for Neurodevelopmental problems. | | | | | |
| **2.** | 3D Motion Perception in children with Eye-movement disorders. | DST | 77.25 Lakhs | Mar’20-Feb’23 | **T.K. Gandhi (Lead)**  R. Saxena, (AIIMS) |
| Abstract: Understanding mechanism of 3D motion perception in normal development and in various Eye movement disorders for developing Engineering solutions for the problem. | | | | | |
| **3.** | Development of Augmented Reality (AR) enabled tool for guidance in Cervical Cancer screening by visual inspection method in single visit approach. | SERB | 33.82 Lakhs | Feb’21-Jan’23 | S. Singhal (AIIMS)  **T.K. Gandhi** |
| Abstract: We are developing a system to remotely assist a healthcare worker in collecting a biopsy sample from the cervix by a trained practitioner using the Microsoft Hololens 2 headset | | | | | |
| 4. | Development of Virtual Therapy for neurodevelopmental Disorders | MoHFW | 47.55 Lakhs | Mar’19-Feb’ 23 | **T.K.Gandhi**  S.Gulati |
| Abstract: In this project, we are developing various virtual therapies using AR/VR for Autism and Cerebral Palsy subjects. | | | | | |
| 5. | Seizure Detection, Prediction and Evaluation: An Intelligent Model | SERB | 51 Lakhs | May’15-April’18 | **T.K.Gandhi (Lead)**  B.K. Panigrahi  M. Tripathi (AIIMS) |
| Abstract: In this project, epilepsy signals were acquired, analysed to understand the patterns of various stages of Epilepsy | | | | | |
| 6 | **Centre of Excellence for Epilepsy - Phase - II** | DBT | 2493.59 Lakhs | May’18-April’23 | M.Tripathi (AIIMS)  **T.K. Gandhi**  Pravat Mandal |
| Abstract: Development of precise Epilepsy management system | | | | | |
| 7 | Advanced epilepsy research: a multidisciplinary  approach | PSA’s Office,  Govt. of india | 118 Lakhs | Mar’18-Feb’21 | **T.K. Gandhi(Lead)**  S. Chandra (AIIMS) |
| Abstract: To develop a portable Epilepsy diagnosis system, which can be used even in tertiary healthcare system with ease. | | | | | |
| 8 | National Programme on Perception Engineering- (NPPE) Phase II | MeitY | 260 Lakhs | Mar’2014-Feb’18 | S. Chaudhury  I.N. Kar  **T.K. Gandhi** |
| Abstract: Experimentations were conducted to understand the mechanism of sensory perception, which helps in advancing development of AI systems. | | | | | |
| 9 | Characterising Autism Spectrum Disorder | DST | 35 Lakhs | Feb’11-Jan’16 | **T.K. Gandhi** |
| Abstract: To understand the visual processing deficit in neurodevelopmental disorders like Autism. | | | | | |
| 10 | Evaluating ocular motion as a tool for characterizing visual field defects | IRD, IIT Delhi | 10 Lakhs | Mar’19-Feb’21 | **T.K. Gandhi(Lead)**  R. Saxena (AIIMS) |
| Abstract: To understand and characterise eye movement disorders for development of efficient Diagnostic techniques. | | | | | |
| 11 | Developing reinforcement based AI model for improvising the predictive skills of individuals with autism | IRD, IIT Delhi | 10 Lakhs | Jan’20-Dec’22 | **T.K. Gandhi(Lead)**  S.Gulati |
| Abstract: To understand and characterize the sensory processing deficit in Autism Spectrum Disorder and developing reinforcement based tool for the development of sensory modalities. | | | | | |
| 12 | Project InCyte: Enhancing Medical Pathology | MIT Global Partnerships Seed Fund: India | $20,000.00 | Jan’19-Dec’20 | P. Sinha  **T.K. Gandhi** |
| Abstract: To understand the technological gap in digital pathology and prepare road map to mitigate the problem. | | | | | |
| 13 | Multimodal Natural Interaction project | Samsung R&D Institute India(SRI) | 20 Lakhs | Jan’2016-Dec’2017 | S. Chaudhury  **T.K. Gandhi** |
| Abstract: To create the framework for multimodal interaction in digital domain. | | | | | |
| 14 | Development of portable eye-movement-based automated perimeter | DST | 72.93 Lakhs | Mar’22-Feb’24 | **T.K. Gandhi(Lead)**  R. Saxena (AIIMS) |
| Abstract: To develop an AR/VR based portable smart perimeter to diagnose various vision related problems | | | | | |
| 15 | Role of Artificial Intelligence (AI) in Autism Spectrum Disorder | DBT | 47 Lakhs | Just Approved | **T.K. Gandhi(Lead)**  S.Gulati (AIIMS) |
| Abstract: Design of the AI models for improvising the predictive skills in children with autistic spectrum disorders in visual, auditory and tactile domains | | | | | |
| 16 | AI model for Diagnosis and Prognosis of Diabetic foot Ulceration | ICMR | 43 Lakhs | Just Approved | **T.K. Gandhi(Lead)**  G. Bisht (Max Multispecialty Hospital) |
| Abstract: To develop AI models for ulcer localization and risk grading in real-time | | | | | |
| 17 | Development of Multiple Cues Driven Model of Healthy Cognitive Aging and its Application for Adaptive User Interface Design | CSRI, DST | 200 Lakhs | Submitted | **T.K. Gandhi(Lead)** |
| Abstract: | | | | | |
| 18 | A randomized controlled trial of the effectiveness of Transcranial Direct Current Stimulation (tDCS) for Treatment of Major Depression | Under IRD MFIRP Scheme in Collaboration with AIIMS | 20 Lakhs | Just Approved | **T.K. Gandhi(Lead)**  Rohit Verma (AIIMS) |
| Abstract: To evaluate the changes in electrical brain activity to quantify treatment progress with tDCS in Major Depressive Disorder (MDD) | | | | | |
| 19 | Developing AI model/s for non-invasive diagnosis and prognosis of NAFLD -A pilot study | DBT | 251 Lakhs | Just Approved | **T.K. Gandhi(Lead: IITD)**  Shiv Kumar Sarin (Lead: ILBS) |
| Abstract: To develop low cost point-of-care tools for non-invasive diagnosis and prognosis of NAFLD by making use of clinical variables, laboratory parameters, and/or imaging biomarkers as an alternative to liver biopsy | | | | | |
| 20 | Brain Wave Entrainment for Welfare and Warfare Applications | SERB | 385.43 Lakhs | Submitted | **T.K. Gandhi(Lead)**  Ritesh Netam (AIIMS)  Ranjan Nanda(ICGEB) |
| Abstract: To understand the resting state EEG dynamics after cortical stimulation and finding out the short term/long term impact in Brain cognition | | | | | |

**Projects (Co-PI)**

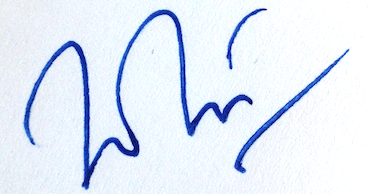
<https://www.indiascienceandtechnology.gov.in/research/centre-excellence-epilepsy-phase-ii?field_area_id=4746> (Centre of Excellence for Epilepsy - Phase – II, 24,93,59,792)

* Received MIT Global Partnerships Seed Fund: India (grant in the amount of $20,000.00) for the project titled “Project InCyte: Enhancing Medical Pathology.”, 1st Jan 2019-Dec 2020.
* Consltancy: Multimodal Natural Interaction project, Samsung R&D Institute India (SRI) – Delhi, Ref.: FT/03/1862/1863/2016, 20Lakhs (One Year). **Completed**
* National Perception Engineering project - Deity, Govt. of India. (250 Lakhs). **Completed**

**Invited Talks**

**Some of the Invited talk/keynote in National and International platform in last four years.**

|  |  |  |  |
| --- | --- | --- | --- |
| S. No. | Date | Talk Details | Venue |
| Year: 2023 | | | |
|  | 10-07-2023 | Invited talk on “Science, Technology and Society” in the joint workshop ' Future Changemakers Summer Bootcamp' on July 10, 2023 for IIT Delhi-IIT Abu Dhabi Joint Program | LHC, IIT Delhi |
|  | 06-07-2023 | Presidential lecture on “Future of Technology” in 14th  ICCCNT 2023 IEEE sponsored Conference, 6th-8th July 2023, IIT DELHI | Seminar Hall, IIT Delhi |
|  | 05-07-2023 | Keynote address on “ Human Inspired Computing” in 2nd International Conference on Human-Centric Smart Computing (ICHCSC 2023), being organized by the University of Engineering & Management (UEM), JAIPUR from 5th-6th July 2023, New Delhi | Indian Habitat Centre, New Delhi |
|  | 25-06-23 | Invited talk on “Inferences from Science, serving Humanity” in *INAE-SERB* conclave on Embracing future Technologies to make engineering education alluring”. | BIT, Ranchi |
|  | 09-03-23 | IBRO spring School on Computational Neuroscience and AI | IIT Delhi |
|  | 27-01-23 | Keynote Talk on “Understanding Brain Science, Advancing AI” in Conference on ‘Next Generation AI: Inspiration from Brain Sciences” | IIT Jodhpur |
|  | 09-01-23 | Invited Lecture on “Brain, Computation and Learning” | IISc Bengaluru |
|  | 06-01-23 | Invited Talk in SERB sponsored workshop “Advancement of AI in Healthcare” | IIIT Una, Himachal Pradesh |
| Year: 2022 | | | |
|  | 15-12-22 | INAE Fellow Induction Talk “Listening to Brain: Advancing Science, Serving Humanity” | BARC, Mumbai |
|  | 13-12-22 | Delivered Talk on “ Explanation of Visual Learning using DNN” under the KARYASHALA Scheme funded by SERB | IIT Patna |
|  | 24-11-22 | Talk on “ Smart Diagnosis of COVID using Voice Signal” | INDICON 2022 Kochi |
|  | 6-04-22 | Talk on “Contribution of AI based solutions in combating the current COVID-19 pandemic scenario”, | NIT Silchar, Assam |
|  | 12-03-22 | Talk on “Science of Intelligence is the Precursor of advancing AI”, | Shyama Prasad Mukherji College, Delhi University |
|  | 25-02-22 | Invited talk in FDP on “Computational Biology” | Goutam Buddha University, UP |
|  | 24-02-22 | Expert talk in AICTE-QIP Sponsored Online One Week Short Term Course on "Issues and challenges of Grid Connected Renewable Energy Sources (ICGCRE-22)” | Jamia Millia Islamia, New Delhi |
|  | 23-02-22 | Invited Talk on “ Science of Intelligence” | KIIT University, Odisha |
|  | 22-02-22 | Key Speaker in FDP on Computational Neuroscience and Applications of AR/VR in healthcare | Tezpur University, Assam |
|  | 03-01-22 | Key Speaker in Seminar on Cloud Computing and Big data; Challenges and Opportunities, AICTE-ISTE Faculty Development Program | Infinity College, Sagar, MP |
| Year: 2021 | | | |
|  | 21-12-21 | Expert Talk on “Understanding Neural Mechanism in Cognitive Processing” | NIT Durgapur. |
|  | 22-11-21 | Expert Talk on Ability and Inability of AI (Fundamental science is the key for translational technology development) | GIET, Odisha |
|  | 13-11-21 | Key Speaker in WSCM 2021: Special Guest Session on “Learning to See” | IIT Mandi |
|  | 12-11-21 | Key Speaker in workshop on Cutting Edge Research works in Science and Technology. Followed by Research Proposal Drafting | Poornima College of Engineering, Jaipur |
|  | 11-11-21 | Key note talk in “International Symposium on computer vision and machine intelligence in medical Image analysis. | Sikkim Manipal Institute of Technology |
|  | 26-10-21 | Talk on “Understanding and Interventions in ASD” (IBRO) | NEHU, Shillong |
|  | 23-10-21 | Expert Talk on “Path to Cutting Edge Research: Challenges & Opportunities” | Guru Ghasidas Central University, Bilaspur, India |
|  | 15-09-21 | Expert Talk on Cognitive IoT Challenges and opportunities. | Oriental college of Engineering, MP |
|  | 9-09-21 | Invited as Resource person for an KTU sponsored online FDP on Industrial Instrumentation and Automation | Online |
|  | 5-09-21 | Invited as Guest lecturer in Epilepsy Conclave by on “Recent advances in epilepsy management” followed by a panel discussion on the following topic: “Machine Learning Applications on Neuroimaging for Diagnosis  and Prognosis of Epilepsy” | Dr. Reddy's Laboratories Ltd. |
|  | 27-08-21 | Expert Talk at ATAL AICTE FDP program on Network Science | Amity  University, Jaipur |
|  | 2-08-21 | Expert Lecture | Panjab University, Chandigarh |
|  | 16/17/18-08-21 | Guest Lecture on Signal and  Systems | Raisoni College of  Engineering and  Technology, Nagpur,  Maharashtra |
|  | 31-07-21 | Key Speaker in AICTE Sponsored One Week Short Term Training Program on "Advanced Technology to bridge the gap between Medical Science and Engineering for the benefit of Mankind". [Phase I (26.07.21 - 31.07.21) & Phase II (23.08.21 - 28.08.21)]., | JIS College of Engineering, West Bengal |
|  | 26-07-21 | Expert talk in the five days IEEE Sponsored International Workshop (virtual mode) on Optimization and Intelligence in Engineering Applications (IEEE OIEA-2021) | NIT Silchar |
|  | 21-07-21 | Talk on “IoT and its application” | Infinity Management and Engineering College, MP. |
|  | 20-07-2021 | Invited talk in a FDP “Challenges and Opportunities in Biomedical Signal Processing” | Gandhi Institute of Engineering & Technology, Odisha |
|  | 29-06-21 | Expert Lecture Understanding Electrical activity in Human Brain using Soft computing techniques & It's inferences | NIT Patna |
|  | 27-06-21 | Global Odiya Talk, “ Application of AI in COVID management” | Online |
|  | 22-06-21 | Expert Lecture on Computational neuroscience and computer vision in healthcare Application | Goutam Budh University |
|  | 04-06-21 | Expert Lecture | Dr. Mahalingam College of Engineering & Technology, TN |
|  | 26-03-21 | Guest Lecture in IEEE KGP section EMBS SBC | Online |
|  | 26-03-21 | Expert Talk on IoT & ML towards smart eco system (TEQIP) | Coimbatore Institute of Technology |
|  | 22-03-21 | Keynote in ICACCP 2021 | SMIT, Sikkim |
|  | 20-03-21 | Expert Talk on Application of MATLAB in Image and signal processing | Ojaswini Institute, MP |
|  | 8-03-21 | Expert Lecture on MRI Image processing in (FDP ) | NIT Hamirpur |
|  | 8-03-21 | Expert Lecture on MR Physics (FDP) | NIT Hamirpur |
|  | 6-03-21 | Expert talk on “Integrating Research in Basic Science with Applied Pharmaceutical Science” Restoring sight to Visually Impaired” | Roland Institute of Pharmaceutical Sciences, Brahmapur |
|  | 6-03-21 | Expert Lecture in STTP under AICTE-AQIS "Developing R&D culture in Educational Institutes through Project Based learning” | Poornima college of Engineering, Jaipur |
|  | 02-02-21 | Expert Lecture in STTP on "Artificial Intelligence and its Real World Applications | KMBB College of Engineering |
|  | 20-01-21 | Expert talk on Computational Biology | MNIT Jaipur |
|  | 19-01-21 | Expert talk on AI Applications in Smart Grid | OIST Bhopal |
|  | 18-01-21 | Invited talk on “ Healthcare Technology: Challenges & Opportunities” in a FDP ' Emerging technologies in Healthcare at | L.D College of Engineering, Ahmedabad |
|  | 07-01-21 | Expert talk in TEQIP sponsored course on the "Machine Learning in Digital Image Processing” | G. B. Pant Institute of Engineering and Technology, Pauri Garhwal Uttarakhand |
| Year: 2020 | | | |
|  | 22-12-20 | Keynote Talk in International Conference on Applied Scientific Computational Intelligence using Data Science ASCI 2020 on “ Future of Machine Intelligence” | Manipal University, Jaipur |
|  | 19-12-20 | Delivered talk on “Understanding the first step of Ground breaking Research and Development” | KMBB, Odisha |
|  | 14-12-20 | Invited Talk in a Short Term Training Program (STTP) under AICTE-AQIS "Developing R&D culture in Educational Institutes through Project Based learning" Phase-II (December 14-19, 2020) | Poornima College of Engineering, Jaipur, Rajasthan |
|  | 12-12-20 | Talk in AICTE sponsored STTP under AQIS on "Advance & Emerging Trends in Signal Processing and Machine Learning" on “Understanding the need of Signal Processing & ML in medical Imaging” | GIET UNIVERSITY, Odisha |
|  | 11-12-20 | Invited talk on “ Understanding applications of Machine Learning in healthcare and vice versa “ in short term course on "Machine Learning in Healthcare" | IIEST Shibpur, WB |
|  | 23-11-20 | Invited lecture in FDP on "Machine Learning and its Applications in Image Processing" | Indira Gandhi Delhi Technical University for Women (IGDTUW), New Delhi |
|  | 23-10-20 | Expert lecture on “Cognitive inspired Embedded/IoT Systems” | Sri Krishna College of Engineering and Technology, Tamil Nadu |
|  | 29-09-20 | Invited Talk on “Computational Techniques in Image and Signal Processing”, in an AICTE-QIP sponsored STC program | SLIET Longowal |
|  | 23-09-20 | Expert lecture in workshop on “Modern Trends in Image Processing in Medical Application” on the topic “MRI/fMRI Image Processing: Challenges & Opportunities” | VVP Engineering College, Rajkot |
|  | 21-09-20 | Expert Lecture on “ Understanding concepts of signal processing and machine learning” | Coimbatore Institute of Technology, Coimbatore |
|  | 22-09-20 | Expert Lecture in a GUJCOST sponsored online STTP on “Modern Trends in Image Processing in Medical Applications” | V.V.P. Engineering College, Rajkot |
|  | 28-02-20 | Invited talk in TEQIP Program on ML & AI | BPUT, Odisha |
|  | 17-01-20 | Invited talk in International workshop on Science of Intelligence | IIT Jodhpur |
| Year: 2019 | | | |
|  | 17-12- 19 | Invited talk | Sophia women’s College, Ajmer |
|  | 16-12- 19 | Invited talk on Artificial Intelligence | Chitkara University, organized by IIT Roorkee |
|  | 4-10-19 | Invited talk in a TEQIP program | Atal Vihari Vajpayee Engg. Himachal Pradesh |
|  | 20-9-19 | Invited talk in FDP | JNU, New Delhi |
|  | 10-09-19 | Invited talk in Research workshop | AKTU, Lucknow |
|  | 10-08-19 | Invited talk in an FDP program | VJIT, Hyderabad |
|  | 08-08-19 | Invited talk in a FDP Program | Rajasthan Technical University |
|  | 29-03-19 | Delivered lecture on Brain signal processing | AIIMS, Haridwar |
|  | 08-03-19 | Invited talk in medical Imaging workshop | KIIT University, Bhubaneswar |
|  | 27-02-19 | Invited talk and session chair in an international Conference | SMIT, Sikkim |
|  | 18-02-19 | Invited Talk and judge in Technical Hackathon | VSSUT |
|  | 10-01-19 | Invited talk in International Conference on  Distributing computing and IoT | KIIT University, Bhubaneswar |
|  | 05-01-19 | Invited Talk | Banasthali University |
| Year: 2018 | | | |
|  | 19-12-18 | Invited talk and collaborative research work | The University of Groningen, Laboratory of Experimental Opthalmology, University Medical Center Groningen, Netherlands |
|  | 6-12-18 | Invited Talk | NIT Surathkal |
|  | 17-09-18 | Invited Talk in a TEQIP funded workshop | Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Sonipat |
|  | 17-05-18 | Invited talk on “Brain-Machine Interfacing: Challenges and Opportunity” on 50th world Telecom and information society Day | CSIR-CEERI, Pilani, Rajasthan |
|  | 22-04-18 | Invited talk on Technology for Sleep in Sleep medicine | IIT Delhi |
|  | 20-04-2018 | Invited talk on Smart City | ITS Engineering College, Greater Noida |
| Year: 2017 | | | |
|  | 22-12-17 | Invited talk in a Science Camp (for 11th and 12th standard students) | IIT Bhubaneswar |
|  | 21-12-2017 | Keynote talk at IEEE International conference on Man- Machine Interfacing, | CV Raman College of Engg, Bhubaneswar |
|  | 12-11-2017 | Invited Talk in an International conference “Brain modes 2017” | NBRC |
|  | 23-10-17 | Invited talk in IEEE Computer Society | PVPSIT College, Vijayawada |
|  | 18-09-17 | Invited Talk on Applications of pattern recognition & Machine Learning in Medical Science | JNU, New Delhi |
|  | 07-09-17 | Invited talk & session chair in International Conference | SIMT, East Sikkim, Sikkim, India |
|  | 26-05-17 | Invited talk and collaborative research | MGH Harvard University, USA |



(Tapan K. Gandhi, Ph.D.)