

## Profile Page



Name : Dr Dilbag Singh

Designation : Professor

Department : Instrumentation & Control Engg.

Qualification : PhD Electrical Engg (IIT Roorkee)  
ME Control & Guidance (University of Roorkee)  
BE Electrical Engg (PEC Chandigarh)  
Pre-Engg Non-Medical (DAV College, Chandigarh)

Address : NIT Campus  
Jalandhar, Punjab - 144027

Email : singhd@nitj.ac.in

Phone : 9888492132

### Research Interests :

Biosignal Processing and Instrumentation, Electrical Measurements and Instrumentation, Control Systems, Small hydropower plants, power system relays.

### Other Profile Links :

#### Google Scholar Link :

Dr Dilbag Singh Dahiya [Click Here](#)[Dilbag Singh](#) [Click Here](#)

#### Personal Web Link :

vidwan [Click Here](#)

ORCID [Click Here](#)

ResearchGate [Click Here](#)

Scopus [Click Here](#)

### Journal Publications :

Year	Journal	Publication
2021	Microgravity Science and Technology 33 (4), 1-11	V Shankhwar, Dilbag Singh, KK Deepak. Characterization of Electromyographical Signals from Biceps and Rectus Femoris Muscles to Evaluate the Performance of Squats Coupled with Countermeasure Gravitational Load
2021	Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine	Madhwendra Nath, Subodh Srivastava, Niharika Kulshrestha, Dilbag Singh; Detection and localization of S1 and S2 heart sounds by 3rd order normalized average Shannon energy envelope algorithm

2021	Microgravity Science and Technology 33 (2), 1-10	V Shankhwar, Dilbag Singh, KK Deepak; Effect of Novel Designed Bodygear on Gastrocnemius and Soleus Muscles during Stepping in Human Body
2020	Biomedical Signal Processing and Control, vol. 57, pp. 101826 1-7	Mukesh, Kumar, Dilbag Singh, and K. K. Deepak. Identifying heart-brain interactions during internally and externally operative attention using conditional entropy.
2020	Biomedical Engineering: Applications, Basis and Communications, (SCOPUS, ESCI) Vol. 32(02) PP. 2050014	Mukesh, Kumar, Dilbag Singh and KK Deepak; Identifying the correlation between encephalographic signal irregularity and heart rate variability to differentiate internally and externally operative attention
2020	Advances in Computational Intelligence Techniques, pp 95–107	Mukesh Kumar, Dilbag Singh, KK Deepak; Fractal Analysis of Heart Dynamics During Attention Task
2020	Int. J. of Medical Engineering and Informatics 12 (3), 228-236	H Mary, Dilbag Singh, KK Deepak; Changes in scale-invariance property of electrocardiogram as a predictor of hypertension
2018	Biomedical Engineering: Applications, Basis and Communications, vol. 30, no. 2, pp. 1850016 1-9, 2018	Helen Mary MC, Dilbag Singh and KK Deepak. “Identifying deep breath effect on cardiovascular signals using conditional entropy: an information domain approach,”
2018	Biomedical Signal Processing and Control, vol. 43, pp. 196–203, 2018	Helen Mary MC, Dilbag Singh and KK Deepak, “Impact of respiration on cardiovascular coupling using Granger causality analysis in healthy subjects,”
2017	J. Eng. Sci. Technol. Rev., vol. 6, no. 5, pp. 7–14, 2017	A. B. Queyam, S. K. Pahuja, and D. Singh, “Non-Invasive Feto-Maternal Well-Being Monitoring: A Review of Methods
2017	Int. J. Intell. Syst. Appl., vol. 9, no. 3, pp. 41–50, Mar. 2017	A. Bin Queyam, S. K. Pahuja, and D. Singh, “Simulation and Analysis of Umbilical Blood Flow using Markov-based Mathematical Model
2017	Technologies, vol. 5, no. 4, pp. 68:1-24, 2017	A. B. Queyam, S. K. Pahuja, and Dilbag Singh, “Quantification of Feto-Maternal Heart Rate from Abdominal ECG Signal Using Empirical Mode Decomposition for Heart Rate Variability Analysis,”
2016	Biocybernetics and Biomedical Engineering (Elsevier), vol. 36, no. 2, pp. 355-65, 2016.	Amritpal Singh, BS Saini, and Dilbag Singh, "A new baroreflex sensitivity index based on improved Hilbert–Huang transform for assessment of baroreflex in supine and standing postures
2016	Australasian Physical & Engineering Sciences in Medicine, vol. 39, no. 2, pp. 557-69, 2016.	Amritpal Singh, BS Saini, and Dilbag Singh, " An adaptive technique for multiscale approximate entropy (MAEbin) threshold (r) selection: application to heart rate variability (HRV) and systolic blood pressure variability (SBPV) under postural stress
2016	Computer and Electrical Engineering, vol. 53, pp. 244-262, 2016	Gaurav Sethi, B. S. Saini and Dilbag Singh, “Segmentation of cancerous regions in liver using an edge-based and phase congruent region enhancement method
2016	Australasian Physical & Engineering Sciences in Medicine, vol. 39, no. 2, pp. 557-69, 2016	Amritpal Singh, BS Saini, and Dilbag Singh, " An adaptive technique for multiscale approximate entropy (MAEbin) threshold (r) selection: application to heart rate variability (HRV) and systolic blood pressure variability (SBPV) under postural stress
2016	Computer and Electrical Engineering, vol. 53, pp. 244-262, 2016.	Gaurav Sethi, B. S. Saini and Dilbag Singh, “Segmentation of cancerous regions in liver using an edge-based and phase congruent region enhancement method
2016	Medical & Biological Engineering & Technology, vol. 54, no. 5, pp. 723-32, 2016.	Amritpal Singh, BS Saini, Dilbag Singh, “An alternative approach to approximate entropy threshold value (r) selection: application to heart rate variability and systolic blood pressure variability under postural challenge

2016	Medical & Biological Engineering & Technology, vol. 54, no. 5, pp. 723-32, 2016.	Amritpal Singh, BS Saini, Dilbag Singh, “An alternative approach to approximate entropy threshold value (r) selection: application to heart rate variability and systolic blood pressure variability under postural challenge
2015	Fluctuation and Noise Letters, vol. 14, no. 3, pp. 1550031-1-15, 2015	Amritpal Singh, BS Saini, and Dilbag Singh, "Multiscale Joint Symbolic Transfer Entropy for Quantification of Causal Interactions between Heart Rate and Blood Pressure Variability under Postural Stress
2015	International Journal of Robotics and Automation, vol. 4(1), pp. 82-92, March 2015	KS Nagla, Moin Uddin and Dilbag Singh, “Dedicated Filter for robust occupancy grid mapping
2015	Journal of Electrocardiology, Vol. 48(4), pp. 652-668, July–August 2015	Peter W. Macfarlane, Suzanne M. Lloyd, Dilbag Singh, Satish Hamde, Elaine Clark, Brian Devine, Bernard G. Francq, Vinod Kumar, “Normal limits of the electrocardiogram in Indians
2015	Indian Journal of Physiology and Pharmacology, vol. 59, no. 5, pp.47, Nov 2015.	Helen Mary MC, Dilbag Singh and KK Deepak. “Granger Causality Approach on Cardiovascular System during Postural Change
2015	Indian Journal of Physiology and Pharmacology, vol. 59, no. 5, pp.47, Nov 2015	Helen Mary MC, Dilbag Singh and KK Deepak. “Granger Causality Approach on Cardiovascular System during Postural Change
2014	IET Image Processing, vol. 8(8), pp. 435-444, 2014	Jagroop Singh, Dilbag Singh and Moin Uddin, “Detection methods for blocking artefacts in transform coded images
2014	Computers & Electrical Engineering, vol. 40(5), pp. 1774–1787, July 2014.	I. Saini, Dilbag Singh and A. Khosla, “Electrocardiogram beat classification using empirical mode decomposition and multiclass directed acyclic graph support vector machine
2014	International Journal of Robotics and Automation, vol. 3(2), pp. 131-138, June 2014	K.S. Nagla, Moin Uddin and Dilbag Singh, “Multisensor data fusion and integration for mobile robots: A review
2014	Journal of Electrocardiology, Vol. 47(6), pp. 809-814, November–December 2014	P.W. Macfarlane, I.A. Katibi, S.T. Hamde, Dilbag Singh, E. Clark, B. Devine, B.G. Francq, S. Lloyd, and V. Kumar, “Racial differences in the ECG - selected aspects
2014	Journal of Medical Engineering and Technology, vol. 38, no. 01, pp. 55-61, 2014	Helen Mary M C, Dilbag Singh, “Multifractal Application on Electrocardiogram
2014	Journal of Medical Engineering & Technology, vol. 38(3), pp. 115-124, April 2014.	I. Saini, Dilbag Singh and A. Khosla, “K-nearest neighbour-based algorithm for P- and T-waves detection and delineation
2013	IETE Journal of Research, vol. 59(5), pp. 615-623, 2013	Indu Saini, Dilbag Singh, Arun Khosla, “P- and T-wave delineation of ECG signal using Support Vector Machine
2013	Journal of Advanced Research, vol. 4(4), pp. 331–344, July 2013	I. Saini, Dilbag Singh and A. Khosla, “QRS detection using K-Nearest Neighbor algorithm (KNN) and evaluation on standard ECG databases
2013	Int. J. Medical Engineering and Informatics, vol. 5(1), pp. 81-101, 2013	I. Saini, Dilbag Singh and A. Khosla, “Detection of QRS-complex using K-nearest neighbor
2012	International Journal of Systems Science, vol. 43, no. 5, pp. 884-893, 2012	Butta Singh, Dilbag Singh, A.K. Jaryal and K.K. Deepak, “Ectopic beats in approximate entropy and sample entropy based HRV assessment
2012	Cardiovascular Engineering and Technology, vol. 3, no. 2, pp. 211-216, 2012	Butta Singh and Dilbag Singh, “Effect of threshold value r on multiscale entropy based HRV
2012	Robotics and Autonomous Systems, vol. 60, pp. 1245–1252, 2012	K.S. Nagla, Moin Uddin and Dilbag Singh, “Improved occupancy grid mapping in specular environment

2012	International Journal of Medical Engineering and Informatics, vol. 4, no. 3, pp. 299-324, 2012	Indu Saini, Dilbag Singh and Arun Khosla, "Support vector machine-based QRS detection – evaluation on standard databases
2012	International Journal of Medical Engineering and Informatics, vol. 4, no. 1, pp. 55-65, 2012	Butta Singh and Dilbag Singh, "Modified multiscale entropy in HRV for automatic selection of threshold value r
2011	Signal Processing: Image Communication (Elsevier), vol. 26, pp. 493-506, May 2011	Jagroop Singh, Sukhwinder Singh, Dilbag Singh and Moin Uddin, "Detection method and filters for blocking effect reduction of highly compressed images
2011	AEU-International Journal of Electronics and Communications(Elsevier), vol. 65, pp. 827-839, 2011.	Jagroop Singh, Sukhwinder Singh, Dilbag Singh and Moin Uddin, "A signal adaptive filter for blocking effect reduction of JPEG compressed images
2011	International Journal of Signal and Imaging Systems Engineering (IJSISE), vol. 4, pp. 181-188, 2011	Jagroop Singh, Sukhwinder Singh, Dilbag Singh and Moin Uddin, "Blocking artifacts detection in block-based DCT compressed images
2011	International Journal of Biomedical Engineering and Technology, vol. 7, no. 4, pp. 353-364, 2011	Butta Singh and Dilbag Singh, "Ectopic beats and editing methods for Poincaré plot based HRV
2010	International Journal of Medical Engineering and Informatics, vol. 2(2), pp. 177-194, 2010	B. S. Saini, Dilbag Singh, and Vinod Kumar, "Optimal Lomb transform variant in HRV assessment
2008	IETE Journal of Research, vol. 54(3), pp. 209-216, May-June, 2008	Dilbag Singh, B. S. Saini and K. Vinod, "Heart Rate Variability – A Bibliographic Survey
2006	Journal of Medical Engineering and Technology (UK), vol. 30(3), pp. 145-150, 2006.	5. Dilbag Singh, K. Vinod, S. C. Saxena and K. K. Deepak, "Spectral Evaluation of Aging Effects on Blood Pressure and Heart Rate Variations in Healthy Subjects,
2006	IETE Journal of Research, vol. 52(3), pp. 481-488, Nov.-Dec., 2006	Dilbag Singh and K. Vinod, "The time evolution of frequency components of heart rate variability using wavelets
2006	Journal of Medical Engineering and Technology (UK), vol. 30(3), pp. 145-150, 2006.	Dilbag Singh, K. Vinod, S. C. Saxena and K. K. Deepak, "Spectral Evaluation of Aging Effects on Blood Pressure and Heart Rate Variations in Healthy Subjects,
2005	Journal of Medical Engineering & Technology (UK), vol. 29(2), pp. 95-101, 2005.	Dilbag Singh, K. Vinod, S. C. Saxena and K. K. Deepak, "An improved windowing technique for heart rate variability power spectrum estimation
2005	Computers and Electrical Engineering, vol. 31, pp. 334-344, 2005	K. Vinod, S. C. Saxena, V. K. Giri and Dilbag Singh, "Improved modified AZTEC technique for ECG data compression: Effect of length of parabolic filter on reconstructed signal
2004	Physiological Measurement (UK), vol. 25, pp. 721-735, June 2004	Dilbag Singh, K. Vinod, S. C. Saxena and K. K. Deepak, "Effects of RR segment duration on HRV spectrum estimation,"
2004	Journal of Medical Engineering & Technology (UK), vol. 28(6), pp. 263-272, 2004.	Dilbag Singh, K. Vinod and S. C. Saxena, "Sampling frequency of the RR-interval time-series for spectral analysis of the heart rate variability,"

## Conference Publications :

Year	Conference	Publication
2020	International Online Conference (IOCSRT-2020), September 24-25, 2020; PU Chandigarh.	Vishwajeet, Dilbag Singh, and K. K. Deepak, (2020), Human renal artery blood flow modeling and and simulation for weightlessness environment,

2020	IAA ISRO ASI Human Spaceflight Programme Symposium Bangalore, 22-24 January 2020	Vishwajeet, Dilbag Singh, and K. K. Deepak, (2020), Validation of Head Down Tilt Microgravity Experiment on Earth
2020	IAA ISRO ASI Human Spaceflight Programme Symposium Bangalore, 22-24 January 2020	Vishwajeet, Dilbag Singh, and K. K. Deepak, (2020), Modelling and Simulation of Carotid Artery Blood Flow for Microgravity Environment
2019	5th IEEE International Conference on Signal Processing, Computing and Control, JUIT Solan	Mukesh Kumar, Dilbag Singh, and K. K. Deepak, (Oct 2019), Multifractal spectrum analysis of heart rhythm during internally and externally operative attention
2019	5th IEEE International Conference on Signal Processing, Computing and Control, JUIT Solan	Vishwajeet, Dilbag Singh, and K. K. Deepak, (Oct 2019), Modelling and Simulation of Carotid Artery in Microgravity
2019	17th annual International Ergonomics Conference 'Humanizing Work and Work Environment' (HWWE 2019)	Mukesh Kumar, Dilbag Singh, and K. K. Deepak, Exploring correlation between linear and non-linear features of short-term heart rhythm fluctuations during internally and externally operative attention
2019	17th annual International Ergonomics Conference 'Humanizing Work and Work Environment' (HWWE 2019)	Vishwajeet, Dilbag Singh, and K. K. Deepak, (Nov 2019), Modelling and Simulation of Carotid Artery with Fat Blockage
2019	A Multitrack National Conference SLIETCON-2019, SLIET Longowal, Chandigarh	Vishwajeet, Dilbag Singh, and K. K. Deepak, (Mar 2019), Development of a Human Body Finite Element Model for Knee Joint Investigation,
2019	A Multitrack National Conference SLIETCON-2019, SLIET Longowal, Chandigarh	Mangi Lal, Dilbag Singh, Analysis of Heart Rate Variability (HRV) for different body posture using Wavelet Transform,

### Book/Chapter Publications :

Type	Title	Publisher	Authors	ISBN/ISS N No.	Year
Book Chapter	Book Title :- Productivity with Health, Safety, and Environment; Contributed Chapter:- Exploring Correlation Between Linear and Non-linear Features of Short-Term Heart Rhythm Fluctuations During Internally and Externally Operative Attention	Springer	Mukesh Kumar, Dilbag Singh, and K. K. Deepak	ISBN 978-981-16-7361-0 (eBook)	2022
Book Chapter	Book Title :- Smart Healthcare for Disease Diagnosis and Prevention ; Contributed Chapter :- Power spectrum analysis of heart rate variability during internally and externally operative attention	Elsevier	Mukesh Kumar, Dilbag Singh, and K. K. Deepak	9780128179130	2020
Book chapter	Book Title :- Smart Healthcare for Disease Diagnosis and Prevention; Contributed Chapter :-Investigation of Heart Rate Variability with the Help of Welch Periodogram in Indian Young Adults Based on Body Physique	Elsevier	Vishwajeet, Dilbag Singh, and K. K. Deepak	9780128179130	2020

Book chapter	Book Title :-Advances in Computational Intelligence Techniques; Contributed Chapter :- Fractal analysis of heart dynamics during attention task	Springer Nature	Mukesh Kumar, Dilbag Singh, and K. K. Deepak	978-981-15-2620-6	2020
Book Edited	Medical Data Security for Bioengineers	IGI Global, Hershey, Pennsylvania USA	Butta Singh, Barjinder Singh Saini, Dilbag Singh, Anukul Pandey	9781522579526	2019

## Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Investigator	Collaborative Project	VSAT-Enabled Mobile E-Learning Terminals	MHRD	July 2010	July 2011	Rs 1376151	Completed	B S Saini; HK Verma, IITR
Investigator	Collaborative	Establishment of a database of ECGs recorded from healthy native Indian population	University of Glasgow and NITJ	July 2008	July 2012	10 Lakh	Completed	Vinod Kumar, IITR; ST Hamde, SGGSiet Nanded; PW Macfarlane, Univ of Glasgow

## Events Organized :

Category	Type	Title	Venue	From	To	Designation
Conference	International	Int. Conf. on Biomedical Engineering and Assistive Technologies (BEATS-2010)	NIT Jalandhar	17-12-10	19-12-10	Organising Secretary
Conference	International	2nd Int. Conf. on Biomedical Engineering and Assistive Technologies (BEATS-2012)	NIT Jalandhar	06-12-12	07-12-12	Conference Chair
STC	National	Modern Practices in Instrumentation & Control Engineering	NIT Jalandhar	13-07-09	17-07-09	Chief Coordinator
Winter School	National	Winter School on Instrumentation & Control Engineering	NIT Jalandhar	11-01-10	15-01-10	Chief Coordinator
Summer School	National	Instrumentation & Control Engineering	NIT Srinagar	21-06-10	25-06-10	Chief Coordinator

STC	National	Recent Trends in Instrumentation and Control Engineering (RTICE-2014)	NIT Jalandhar	08-12-14	12-12-14	Convener
STC	National	Recent Advances in Instrumentation & Control Engineering	NIT Jalandhar	05-03-07	09-03-07	Chief Coordinator
STC	National	Impact & strategies for higher education: Comprehensive Research Pedagogy, Methodology & Design (ISHE-2020)	NIT Jalandhar	17-08-20	21-08-20	Patron
STC	National	Recent Trends in Renewable Energy Systems and Their Control	NIT Jalandhar	14-09-20	18-09-20	Patron
STC	National	Process Modeling, Simulation, Control and Optimization (PMSCO-2020)	NIT Jalandhar	16-09-20	20-09-20	Patron
STC	National	Operation and control of next generation restructured low carbon power system	NIT Jalandhar	17-09-20	21-09-20	Convener
STC	National	Stability Analysis, Protection and Control of Microgrid	NIT Jalandhar	25-09-20	29-09-20	Convener
STC	National	Expert Lecture: 'Heart Rate Variability-Noninvasive Autonomic Monitoring Challenges' on 22-09-20 on "Research Scholars' Week: Engineering (RSW-2020)	sponsored by TEQIP-III and organized by NIT Kurukshetra under TEQIP-III-Twinning System with Engineering College Bikaner on Cisco WebEx Meetings platform.	17-09-20	22-09-20	guest lecturer

### Professional Affiliations :

Designation	Organization
Sr. Member	IEEE
Fellow	Institution of Engineers
Fellow	Institution of Electronics and Telecommunication Engineers
Life Member	Instrumentation Society of India
Life Member	Biomedical Engineering Society of India
Life Member	Indian Society for Technical Education

### PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
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Vishwajeet	Development of Countermeasure Gravity Loading Bodysuit and its Potential Association with Cardiovascular and Muscular System	Completed	2022	Dr. K K Deepak
Mukesh Kumar	Investigation of Heart-Brain Interactions during Internally Operative versus Externally Operative Attention Regulatory Mechanisms	Completed	2021	Dr. K K Deepak
Helen Mary M.C	Characterization of dynamic interaction between cardiovascular and respiratory signals during Autonomic stimulation	Completed	2019	Dr. K K Deepak
Abdullah Bin Queyam	Real-time monitoring of fetal health using non-invasive multi-parameter system	Completed	2019	Dr S K Pahuja
Amritpal Singh	Assessment of cardiovascular variability in supine and standing postures	Completed	2015	Dr B S Saini
Kuldeep Singh Nagla	Analysis and development of sensor fusion framework for mobile robots	Completed	2014	Dr Moin Uddin
Jagroop Singh	Blocking artifact detection and reduction of JPEG compressed images	Completed	2013	Dr Sukhwinder Singh and Dr Moin Uddin
Butta Singh	Entropy based studies on Heart Rate Variability	Completed	2011	
Indu Bala	Machine Learning Algorithms for Enhanced ECG Analysis	Completed	2009	Dr Arun Khosla
B S Saini	Signal Processing for Heart Rate Variability	Completed	2009	

## Patents :

Name	Reg./Ref. No.	Date of Award/Filing	Organization	Status
Air-cooled and breathable single piece bodysuit for personal protection	202011034189	10.8.20	Patent Office Delhi	Published
Controlled Artificial Gravity Generating Bed	202111001877	15.01.21	Patent Office Delhi	Filed
A Controlled Pushup Exercise Device for Astronauts	202111043897	Sept 2021	Patent Office Delhi	Filed

## Admin. Responsibilities :

Position Held	Organization	From	To
Head, Dept. of Instrumentation & Control Engineering	Dr B R Ambedkar National Institute of Technology, Jalandhar	04-09-13	31-01-16
Head, Dept. of Electrical Engineering	Dr B R Ambedkar National Institute of Technology, Jalandhar	31-01-15	31-01-16
Deputy Registrar (Finance)	Dr B R Ambedkar National Institute of Technology, Jalandhar	01-10-12	31-01-15
Associate Dean (Planning & Development)	Dr B R Ambedkar National Institute of Technology, Jalandhar	24-01-17	till date
Deputy Proctor	Dr B R Ambedkar National Institute of Technology, Jalandhar	31-03-08	31-03-11
Coordinator, Grid Connected Roof Top Solar PV Power Plant	Dr B R Ambedkar National Institute of Technology, Jalandhar	22-06-17	till date
Head, Dept. of Electrical Engineering	Dr B R Ambedkar National Institute of Technology, Jalandhar	05-02-2020	till date



## Award and Honours :

<b>Title</b>	<b>Activity</b>	<b>Given by</b>	<b>Year</b>
Best Teacher Award	Academic and Research	Director, NIT Jalandhar	2021
Best Oral Presentation Award	IOCSRT-2020, Sept. 24-25, 2020, PU, Chandigarh	IOCSRT-2020	2020
Best Oral Presentation Award	Multitrack National Conference SLIETCON-2019, March 1-2, 2019, Venue: Chandigarh	SLIETCON-2019	2019