

## **Profile Page**



Name : Dr Rajesh Singla

Designation : Associate Professor

Department : Instrumentation & Control Engg.

Qualification : PhD Instrumentation and Control Engineering (NIT Jalandhar)  
M Tech Electrical(M&I) (IIT Roorkee)  
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### **Research Interests :**

Biomedical Engineering, Brain-computer interface, rehabilitation engineering, Machine Vision, Machine/Deep Learning, Soft Computing & Optimization Techniques, Control and Optimization, Adaptive and Robust Control, Process Design

### **Other Profile Links :**

#### **Google Scholar Link :**

rajesh singla [Click Here](#)

#### **Personal Web Link :**

Scopus [Click Here](#)

ORCID [Click Here](#)

Publons [Click Here](#)

### **Journal Publications :**

Year	Journal	Publication
2023	Biomedical Engineering/Biomedizinische Technik	Yamini Gogna, Sheela Tiwari, Rajesh Singla Towards a versatile mental workload modeling using neurometric indices
2022	Medical & Biological Engineering & Computing, vol. 60, issue 10 ,pp. 2899-2916	N Rathi, R Singla, S Tiwari A comparative study of classifications methods for designing a pictorial P300 based authentication system

2022	Cybernetics and Systems	Vishal Vishnoi, Sheela Tiwari, Rajesh Singla Performance Investigation of EMFO-Based Perpetual Online Tuned Variable SR-Controller in Simulated Real Environment
2022	NeuroQuantology October 2022, Vol 20   Issue 14   Page 743-748   Doi : 10.4704/nq.2022.20.14. NQ880103	Yamini Gogna, Dr. Sheela Tiwari, Dr. Rajesh Singla, Cognitive Load With Different Origins: An EEG Modal- Based Explanation
2022	NeuroQuantology, Vol 20   Issue 14   Doi : 10.4704/nq.2022.20.14. NQ880121	Rahul Kumar, Rajesh Singla, EEG based Attention Score Analysis of Two Game Genre
2021	Advanced Biomedical Engineering, Japanese Society for Medical and Biological Engineering, vol. 10, pages 58-69	Akshay Katyal, Rajesh Singla, Synchronized Detection of Evoked Potentials to Drive a High Information Transfer Rate Hybrid Brain-Computer Interface Application
2021	MAPAN, Springer, vol. 36, pages 67-79	Vishal Vishnoi, Sheela Tiwari, Rajesh Singla, Performance analysis of moth flame optimization-based split-range PID controller
2021	Medical & Biological Engineering & Computing, vol. 59, pp. 633–661	Er Katyal, Rajesh Singla, EEG-based hybrid QWERTY mental speller with high information transfer rate
2021	Behaviour & Information Technology, Taylor & Francis, pages 1-17	Nikhil Rathi, Rajesh Singla, Sheela Tiwari, Towards a role-based authentication system based on SSVEP-P300 hybrid brain–computer interfacing
2021	Cognitive Neurodynamics, Vol. 15(5), pages 805–824	Nikhil Rathi, Rajesh Singla, Sheela Tiwari, A novel approach for designing authentication system using a picture based P300 speller
2021	Arabian Journal for Science and Engineering, Vol. 46, No. 10, pages 9673–9689	Vishal Vishnoi, Sheela Tiwari, Rajesh Singla, Performance Analysis of Enhanced MFO-Based Online-Tuned Split-Range PID Controller
2021	International Journal of Cognitive Informatics and Natural Intelligence (IJCINI), 15(4), 1-13.	Vishal Vishnoi, Sheela Tiwari, Rajesh Kumar Singla, Controller Design for Temperature Control of MISO Water Tank System: Simulation Studies
2020	Brain Computer Interfaces, 7(3-4), Pages 70-89	Nikhil Rathi, Rajesh Singla, Sheela Tiwari, Authentication framework for security application developed using a pictorial P300 speller
2020	Biomedical Engineering: Applications, Basis and Communications, Vol. 32, No. 01	Akshay Katyal, Rajesh Singla, SSVEP-P300 hybrid paradigm optimization for enhanced information transfer rate
2020	Biomedical Signal Processing and Control, Vol. 59	Akshay Katyal, Rajesh Singla, A novel hybrid paradigm based on steady state visually evoked potential & P300 to enhance information transfer rate
2020	Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, Vol. 8(4), 446-457.	Akshay Katyal, Rajesh Singla, Towards enhanced information transfer rate: a comparative study based on classification techniques
2020	Biomedical Engineering: Applications, Basis and Communications, Vol. 32, No. 04	Nikhil Rathi, Rajesh Singla, Sheela Tiwari, Brain Signatures Perspective for High-security Authentication
2019	International Journal of Soft Computing, Volume 121 – No.11	Rajesh Singla, Improving the Performance of Heat Exchanger System
2018	Biomedical Engineering: Applications, Basis and Communications 30 (03), 1850022	R Singla, HYBRID BRAIN–COMPUTER INTERFACE PARADIGM—A STUDY
2017	International Journal of Biomedical engineering and Technology, 23, No.1, 48-58	Rajesh singla, sagar Jatana, The types of hybrid modalities in brain-computer interface systems: a review

2016	International Journal of Biomedical engineering and Technology, 22, No.16, 31-46	Irshad ahmad ansari, Rajesh Singla, BCI: an optimised speller using SSVEP
2015	Computational Science and Techniques, Vol. No. 2(2)	Irshad Ahmad Ansari, Rajesh Singla, Munendra Singh, SSVEP and ANN based optimal speller design for brain computer interface
2014	journal of Medical Engineering and Technology, 38 No. 3, 125-134	Rajesh singla, Arun Khosla , Rameshwar Jha, Influence of Stimuli colour in SSVEP- based BCI wheelchair control using support vector machines
2014	International Journal of Biomedical engineering and Technology, 15, No. 1, 82-93	Rajesh Kumar Singla, Arun Khosla, R Jha, Influence of stimuli colour on feature classification for BCI applications
2014	Int. J. Soft Comput. Eng, Vol. No. 3, pp. 158-163	Rajesh Singla, Neha Sharma, Function classification of EEG signals based on ANN
2014	International Journal of Information and Electronics Engineering, Vol. No. 4(1), pp.6	Rajesh Singla, BA Haseena, Comparison of ssvep signal classification techniques using svm and ann models for bci applications
2013	International Journal of Computer Science and Information Security, Vol. 11(12), pp. 14	Rajesh Singla, Arun Khosla, Rameshwar Jha, Influence of Stimuli Color and Comparison of SVM and ANN classifier Models for BCI based Applications using SSVEPs
2013	Int. J. Signal Process. Syst., Vol. No. 1, pp. 263-7	Rajesh Singla, Arun Khosla, Influence of stimuli color and comparison of SVM and ANN classifier models for steady-state visual evoked potentials
2013	Journal of Biomedical Science and Engineering, Vol. No. 6(11), pp. 1050	Rajesh Singla, Arun Khosla, Rameshwar Jha, Influence of stimuli color on steady-state visual evoked potentials based BCI wheelchair control
2013	International Journal of Electrical and Computer Engineering, Vol. 6(9), pp. 1178-1184	Om Prakash Verma, Rajesh Singla, Rajesh Kumar, Intelligent temperature controller for water-bath system
2013	International Journal of Soft Computing and Engineering (IJSCE), Vol. No. 3(6), pp. 46-52	Rajesh Singla, BA Haseena, BCI based wheelchair control using steady state visual evoked potentials and support Vector machines
2013	International Journal of Computer Science and Information Security, Vol. No. 11(5), pp. 39	Rajesh Singla, Neha Sharma, Navleen Singh Rekhi, A Review Based on Function Classification of EEG Signals
2012	International Journal of Biomedical engineering and Technology, 10, No 2, 134-144	Rajesh Singla, Rohit Sharma, Arun Khosla, R Jha, Moving an object using EEG: an art of BCI
2012	International Journal of Modeling and Optimization, Vol. No. 2(4), pp. 444	Rajesh Singla, Arun Khosla, Intelligent security system for HMI in SCADA applications
2011	Journal of Biomedical Science and Engineering, Vol. No. 4(1), pp. 62	Rajesh Singla, Brijil Chambayil, Arun Khosla, Jayashree Santosh, Comparison of SVM and ANN for classification of eye events in EEG
2010	International Journal of Engineering and Technology, Vol. No. 2(5), pp. 453	Rahul Upadhyay, Rajesh Singla, Analysis of CSTR temperature control with adaptive and PID controller (a comparative study)
2008	Journal of Biomedical Science and Engineering, Vol. No. 1(3), pp. 170	Rajesh Singla, Brain initiated interaction

### Conference Publications :

Year	Conference	Publication
2022	2022 2nd International Conference on Intelligent Technologies (CONIT), IEEE, pg 1-6	Rahul Kumar, Rajesh Singla Attention guided EEG based Game Genre Classification

2021	2021 2nd Global Conference for Advancement in Technology (GCAT), IEEE, pp. 1-4	Priyadarsini Samal, Rajesh Singla, EEG Based Stress Level Detection During Gameplay
2020	International Congress on Information and Communication Technology, Springer, pp. 490-497	Yamini Gogna, Rajesh Singla, Sheela Tiwari, Analyzing Attention Deviation During Collaterally Proceeding Cognitive Tasks
2020	Recent Innovations in Mechanical Engineering: Select Proceedings of ICRITDME 2020, Springer, pp 49.	Perna Singh, Rajesh Singla, and Anshika Kesari, An EEG Based Approach for the Detection of Mental Stress Level: An Application of BCI
2020	Recent Innovations in Mechanical Engineering: Select Proceedings of ICRITDME 2020, Springer, pp. 71	Anshika Kesari, Rajesh Singla, and Perna Singh, EEG Based Study of Pictorial Advertisement Impact on Customers' Market Preferences
2019	Proceedings of International Ethical Hacking Conference 2018, Springer, pp. 177-187	Rajesh Singla, Modelling and Simulation of Proton Exchange Membrane Fuel Cell for Stand-Alone System
2019	5th International Conference for Convergence in Technology 2019, IEEE, pp. 1-4	Yamini Gogna, Rajesh Singla, Steady State Detection during a Cognitive task
2019	5th International Conference for Convergence in Technology 2019, IEEE	Suranjita Ganguly, Rajesh Singla, Electrode Channel Selection for Emotion Recognition based on EEG Signal
2017	ICRAET- 2017, International Conference on Recent Advances in Engineering and Technology, vol. 1, pp. 1-6	Akshay Katyal, Rajesh Singla, Hybrid brain computer interface paradigm- A study
2014	ICCSIT 2013, 6th International conference on computer science and information technology, vol. 4, no.1, pp. 6-10	Rajesh Singla, Haseena BA, Comparison of SSVEP signal classification techniques using SVM and ANN models for BCI applications
2013	ICSPS 2013, 5th international conference on signal processing systems, vol. 1, No. 2, pp. 263-267	Rajesh Singla, Arun Khosla, Influence of stimuli color and comparison of SVM and ANN Classifier models for steady state visual evoked potentials
2010	BEATS-2010, 1st International conference on biomedical engineering & assistive technologies, vol. 1, pp. 250-253	Gajendra kulshrestha, Annu Parkash, Rajesh Singla, Controlling of process parameters by SCADA
2010	ICETC-2010, 2nd International conference on education technology and computer, vol. 2, pp. 323-327	upadhyay R, Singla R, application of adaptive control in process control
2010	WCE-2010, World congress on engineering, vol. 1, pp. 63-66	Chambayil B, Singla R, Jha R, Eye blink classification using neural network
2010	WIMOB-2010, international conference on Wireless and Mobile Computing, Networking and Communications, vol. 1, pp. 466-470	Chambayil B, Singla R, Jha R, Virtual Keyboard BCI using Eye blinks in EEG
2009	CISP 2009, 2nd international conference on image and signal processing, vol. 1, pp. 165-169	Singla R, Saini K , Application of fingerprint recognition in process Control
2009	AICI 2009: International conference on Artificial intelligence and computational intelligence, vol. 1, pp. 580-582	Singla R, Singh B, Brain actuated interaction: An application of BCI
2009	ICBBE -2009, 3rd international conference on bioinformatics and biomedical engineering, vol. 1, pp. 1-4	Singh H, Singla R, Jha R, The effect of mental state on blood pressure and electrocardiogram
2009	ICCSIT- 2009, 2nd IEEE international conference on computer science and information technology, vol. 1, pp. 259-262	Dhillon HS, Singla R, Rekhi NS, Jha R, EOG and EMG based virtual keyboard: A brain-computer interface
2008	CAINE 2008, 21st International conference on computer applications in industry and engineering, vol. 1, pp. 185-190	Singla R, singh H , Gupta B, Human cognitive state estimation using artificial neural network

2008	BIOCOMP 2008- 2008 International conference on bioinformatics and computational biology, vol. 1, pp. 887-890	Singla R, Singh H , . Analysis of physiological measures for human cognitive state estimation
2007	ICBBE-2007, 1st international conference on bioinformatics and biomedical engineering, vol. 1, pp. 1293-1295	Singla R, Pahuja R, Pahuja S, Environment control using BCI

### Book/Chapter Publications :

Type	Title	Publisher	Authors	ISBN/ISSN No.	Year
Book chapter	Different Approaches of Classification of Brain Tumor in MRI Using Gabor Filters for Feature Extraction	Springer	Amit Kr Singh, Rajesh Singla	AISC, volume 1053, pp 1175-1188	2020
Book chapter	Generalized Mathematical Modeling of MEE for Calculation of Steam Efficiency and Steam Consumption	Springer	Om Prakash Verma, Smitarani Pati, Drishti Yadav, Gaurav Manik, Rajesh Singla	AISC, volume 1053, pp 1303–1314	2020
Book Chapter	Real-Time Mental Workload Detector for Estimating Human Performance Under Workload	Springer	R Singla, A Agrawal, V Kumar, OP Verma	LNEE, volume 526, pp383-392	2019
Book Chapter	Industrial Simulation of PID and Modified-MPID Controllers for Coupled-Tank System	Springer	R Singla, A Agrawal, V Kumar, N Pachauri, OP Verma	LNEE, volume 526,pp 421-428	2019
Book Chapter	SSVEP-Based BCIs	Intechopen	R Singla	ISBN: 978-1-78984-069-8, pp. 91-111	2018

### Research Projects :

Role	Project Type	Title	Funding Agency	From	To	Amount	Status	Co-Investigator
Principal Investigator	R&D	Conversion of existing wheel Chair to Brain controlled smart wheelchair system.	BNB Medicare India Pvt. Ltd.	01/03/2023		215500	ongoing	

### Events Organized :

Category	Type	Title	Venue	From	To	Designation
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Workshop	National	Programmable Logic Controllers	Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, Punjab	05-Dec-2016	09-Dec-2016	Convener/Chairman
Conference	International	SoCTA, 2018	NIT Jalandhar	21/12/2018	23/12/2018	Convener/Chairman

### Professional Affiliations :

Designation	Organization
Life Member (L M No. 1249)	Metrology Society of India

### PhD Supervised :

Scholar Name	Research Topic	Status	Year	Co-Supervisor
Vishal Vishnoi	Development of Nature inspired Temperature Control for Mixing Process	Completed	2023	Dr Sheela Tiwari
Nikhil Rathi	Hybrid BCI based password authentication	Completed	2022	Dr Sheela Tiwari
Akshay Katyal	Development and Validation of Hybrid BCI based system	Completed	2021	NA
Yamini Gogna	Cognitive Workload Modelling for prediction of human behavior	Comprehensive done		Dr Sheela Tiwari

### PG Dissertation Guided :

Student Name	Dissertation Title	Status	Year	Co-Supervisor
Rahul Kumar	BCI employed user interest based game genre prediction	Completed	2022	NA
Priyadarsini Samal	Stress level recognition and prediction during gameplay	Completed	2021	NA
Prerna Singh	EEG based approach for the detection of mental stress level: An application of BCI	Completed	2020	NA
Anshika kesari	EEG based study of pictorial advertisement impact on customer's market preferences	Completed	2020	NA
Suranjita Ganguly	A Hybrid emotion recognition approach using Hjorth features and FFT	Completed	2019	NA
Vijay Kumar	Adaptive Neuro fuzzy inference system PID controller for AVR system using Firefly optimization	Completed	2018	NA
Ravi Kumar	Simulation and Modelling of Proton Exchange Membrane Fuel Cell for Stand-Alone System	Completed	2017	NA
Vijay Kumar	Plant Disease Prediction System for Tomato Early Blight	Completed	2017	NA
Vikash Kumar	Improving the Performance of Heat Exchanger System	Completed	2017	NA
Yamini Gogna	Human Performance Analysis through Real-time Mental Workload Detector	Completed	2017	NA
Sagar Jatana	Hybrid Brain Computer Interface Technology using P300 and SSVEP Signals	Completed	2016	NA
Harsh Sahu	Stabilization of Cart Inverted Pendulum	Completed	2016	NA
Trilok Kumawat	Speed Control of DC Motor	Completed	2016	NA
Sneha Gupta	Effective Alarm Management in Process Industries	Completed	2015	NA

Pankaj Kumar Vaishnav	P300 Detection For Human Machine Interface	Completed	2015	NA
Shashank Garg	Real Time Automatic Speech Recognition	Completed	2015	NA
Mr Sushil Keshari	Temperature Control of CSTR using PID, Cascade, FLC & ANFIS Controller	Completed	2014	NA
Mr Harish Kumar Dalal	Classification of EEG Signals for Brain Computer Interface (BCI) Application	Completed	2014	NA
Mr Bharat Sachdeva	Brain Computer Interface based Application using P300 Rhythm	Completed	2014	NA
Mr Abhash	Ground Vehicle Classification using Acoustic Signature and Classifiers	Completed	2014	NA
Brinjendra Kumar Maurya	ANFIS based automatic Voltage Regulator(AVS) System	Completed	2013	NA
Haseena BA	Development of BCI based Wheelchair control using SSVEP	Completed	2013	NA
Mr Debasis Mohapatra	Application of biometrics in process control	Completed	2012	NA
Mr Gaurav Kumar	Process control through internet	Completed	2012	NA
Mr Himanshu Gupta	ANFIS based level controller for coupled tank system	Completed	2012	NA
Mr Irshad Ahamad Ansari	An optimized speller using BCI based on SSVEP	Completed	2012	NA
Ms Niharika Thakur	SSVEP based BCI for an object control in 2D space	Completed	2012	NA
Mr Om Parkash Verma	Intelligent temperature controller for water bath system	Completed	2012	NA
Mr Sunil Pothugunta	Application of BCI in process control	Completed	2012	NA
Mr Anil Kumar Sekharmantri	Application of Biometrics in Process Control	Completed	2011	NA
Mr Deepak Kumar	Implementation of Fuzzy Controller in Process Control	Completed	2011	NA
Mr Rohit Sharma	Brain Actuated Interaction: An Application of Brain Computer Interface	Completed	2011	NA
Ankit Gupta	Iris recognition in Bio metrics	Completed	2010	NA
Annu Prakash	SCADA and its applications	Completed	2010	NA
Brijil C	Brain Computer Interface	Completed	2010	NA
Gajendra Kumar	Applications of PLC & SCADA in Process Industries	Completed	2010	NA
Rahul Upadhaya	Applications of Adaptive control in Process Control Systems	Completed	2010	NA
Rajeev Kumar	Application of SCADA in Process Control	Completed	2009	NA
Kalpana Saini	Application of HMI in Process Control based on fingerprint recognition	Completed	2009	NA
Bhupender singh	Brain Actuated Interaction: An application of BCI	Completed	2009	NA
Mohd Yaseen	A study of corrosion monitoring in chemical process plant	Completed	2008	Anil Manjare
Hari Singh	Human Cognitive state estimation using neural network	Completed	2008	NA

**Patents :**

Name	Reg./Ref. No.	Date of Award/Filling	Organization	Status
Brain Controlled Compact Smart Wheelchair	202111003264	23-01-2021	Dr. B. R. Ambedkar National Institute Of Technology Jalandhar	Published and under examination

**Admin. Responsibilities :**

Position Held	Organization	From	To
Faculty Coordinator Medical Amenities	NIT Jalandhar	23/01/2019	05/02/2020
Library Committee Convener (ICE)	NIT Jalandhar	23/02/2019	30/06/2020
Head of Department, ICE	NIT Jalandhar	06/02/2020	31/05/2022
Member, Medical amenities committee	NIT Jalandhar	09/06/22	till date

**Award and Honours :**

Title	Activity	Given by	Year
Certificate of Appreciation	Chief Convener for STC on "Internet of Things"	NIT Jalandhar	2021
Award of Appreciation	Expert Lecture in STC "Advanced Measurement Systems and its applications"	ICE dept NIT Jalandhar	2020
Award of Appreciation	Expert Lecture in STC "OCDT 2018"	ICE dept NIT Jalandhar	2018
Certificate of Appreciation	Faculty advisor SPICE for techniti 16	NIT Jalandhar	2016
Certificate of Appreciation	Mentoring project submitted to Texas Instrument innovation challenge in India Design contest 2015	Texas Instruments	2015
Certificate of Appreciation	Faculty advisor SPICE for techniti 15, techniti 15 v2	NIT Jalandhar	2015
Certificate of Appreciation	Faculty advisor SPICE for Utkansh 15	NIT Jalandhar	2015
Award of Appreciation	Expert Lecture in STC "RTICE 2014"	ICE dept NIT Jalandhar	2014
Award of Honour	Expert lecture "Brain Computer Interface" on National Technology Day (11 May )	NIT Jalandhar	2007