

# DR. KULBHUSHAN CHAND

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Post Doctoral Fellow,  
Technology Innovation Hub,  
Indian Institute of Technology Mandi,  
VPO Kamand, District Mandi, HP, India – 175075

## EDUCATION

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<b>PhD</b>	2015 – 2022
<i>Electronics and Communication Engineering</i>	
<i>Dr B R Ambedkar National Institute of Technology</i>	
<i>CGPA: 9.0</i>	
<b>MTech</b>	2011 – 2013
<i>Electronics and Communication Engineering</i>	
<i>Lovely professional University</i>	
<i>Graduated with Hons. and University Topper, CGPA: 9.12</i>	
<b>BTech</b>	2006 – 2010
<i>Electronics and Communication Engineering</i>	
<i>Guru Nanak Dev University</i>	
<i>Graduated with Hons., %Marks: 78.05</i>	

## RESEARCH EXPERIENCE

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<b>Post Doctoral Fellow</b>	Nov 2022 – Present
<i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	
<i>Project: Multisensory Human Computer Interaction and Biofeedback</i>	
<b>Pre Doctoral Fellow</b>	Jun 2022 – Nov 2022
<i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	
<i>Project: Multisensory Human Computer Interaction and Biofeedback</i>	
<b>Project Team Member</b>	Apr 2020 – Mar 2024
<i>ISRO Space Technology Incubation Center (S-TIC), Dr B R Ambedkar National Institute of Technology</i>	
<i>Project - Strengthening Ridge to Valley based NRM planning under Mission Water Conservation using Geospatially enabled Serious Gaming</i>	
<b>Doctoral Researcher</b>	Aug 2015 – Apr 2022
<i>Department of ECE, Dr B R Ambedkar National Institute of Technology</i>	
<i>Dissertation: Low cost multimodal biofeedback for mental relaxation</i>	
<i>Advisor: Prof. Arun Khosla</i>	
<b>MTech Researcher</b>	July 2011 – June 2013
<i>Lovely professional University</i>	
<i>Dissertation: A new approach for ECG signal denoising using Adaptive Filtering</i>	

## TEACHING EXPERIENCE

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<b>Teaching Assistant</b>	Aug 2015 – Jul 2020
<i>Department of ECE, Dr B R Ambedkar National Institute of Technology</i>	
<b>Assistant Professor</b>	July 2013 – July 2015
<i>Department of ECE, Lovely Professional University</i>	
<b>Teaching Assistant</b>	Jan 2012 – Nov 2012
<i>Department of ECE, Lovely Professional University</i>	

**Lecturer***Department of ECE, Lovely Professional University*

Dec 2010 – May 2011

**PEER-REVIEWED PUBLICATIONS**

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**Journals - Peer reviewed research papers**

**Chand, K.**, Chandra, S., & Dutt, V. (2024). Raga Bhairavi in virtual reality reduces stress-related psychophysiological markers. *Scientific Reports*, 14(1), 24816. (SCI, IF: 4.3)

**Chand, K.**, Chandra, S., & Dutt, V. (2024). A comprehensive evaluation of linear and non-linear HRV parameters between paced breathing and stressful mental state. *Heliyon*, 10(11). (SCI, IF: 3.9)

**Chand, K.**, & Khosla, A. (2022). BioNES: A plug-and-play MATLAB-based tool to use NES games for multimodal biofeedback. *SoftwareX*, 19, 101184. (SCI, IF: 3.1)

**Chand, K.**, & Khosla, A. (2022). Efficacy of Using Retro Games in Multimodal Biofeedback Systems for Mental Relaxation. *International Journal of Gaming and Computer-Mediated Simulations (IJGMS)*, 14(1), 1–23. (Scopus)

**Chand, K.**, & Khosla, A. (2022). MATLAB-Based Real-Time Data Acquisition Tool for Multimodal Biofeedback and Arduino-Based Instruments: Arduino Firmata Data Acquisition (AfDaq). *Journal of Information Technology Research (JITR)*, 15(1), 1–20.

**Conferences - Peer reviewed research papers/abstracts (\*)**

**Chand, K.**, Chandra, S., & Dutt, V. (2023). Effects of Relaxed and Stressful Mental States on the Heart Rate Variability Parameters. *Mind, Brain, and Consciousness Conference (MBCC)*, India.\*

Chandra, S., **Chand, K.**, & Dutt, V. (2023). Impact of Indian Classical Raga in Immersive Environments on Human Psycho-physiological Parameters. *Proceedings of the 16th International Conference on Pervasive Technologies Related to Assistive Environments. PETRA '23*, Corfu, Greece.

Rao, A. K., Fatma, Z., Menon, V. K., Bhavsar, A., Chowdhury, S. R., Chandra, S., Dutt, V., & **Chand, K.** (2023). Prediction of decision-making performance post-longitudinal tDCS administration via EEG features and machine learning. *Proceedings of the 16th International Conference on Pervasive Technologies Related to Assistive Environments. PETRA '23*, Corfu, Greece.

**Book Chapters**

Jain, B., Khosla, A., **Chand, K.**, & Ahuja, K. (2019). The Pursuit of Zero Food Waste: A Gamified Approach Promoting Avoidance of Dormitory Mess Food Wastage in Educational Institutions. In *Global Initiatives for Waste Reduction and Cutting Food Loss* (pp. 243–267). IGI Global.

Mukherjee, A., Goyal, P., Singh, A., Khosla, A. K., Ahuja, K., & **Chand, K.** (2019). Pursuit of Research: A Gamified Approach Promoting Research Engagement Among Undergraduate Students. In *Fostering Multiple Levels of Engagement in Higher Education Environments* (pp. 132–155). IGI Global.

Padmakar, G. S. V., Khosla, A., & **Chand, K.** (2019). LearnEasy-Android Application as a Technological Intervention for Children With Dyslexia. In *Emerging Trends in the Diagnosis and Intervention of Neurodevelopmental Disorders* (pp. 236–248). IGI Global.

Setia, D., Singh, R., Sharma, A., Khosla, A., Ahuja, K., & **Chand, K.** (2019). Enhancing Tourism and Cultural Experience Through Gamification. In *Positioning and Branding Tourism Destinations for Global Competitiveness* (pp. 152–171). IGI Global.

**Manuscripts in preparation or Review**

**Chand, K.**, Khosla, A., & Dutt, V. (2025). Review of biofeedback for mental relaxation [Manuscript under review].

**Chand, K.**, Khosla, A., & Dutt, V. (2025). A framework to use Nintendo Entertainment System games for biofeedback [Manuscript under review].

## CONFERENCE PRESENTATIONS

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Effects of Relaxed and Stressful Mental States on the Heart Rate Variability Parameters <i>Mind, Brain, and Consciousness Conference (MBCC) - 2023</i> <i>Indian Institute of Technology Mandi</i>	Dec 2023
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## INVITED TALKS (\*) / WORKSHOPS (#)/ LECTURES

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Human Motivation and Engagement Analysis using Octalysis Gamification Framework * <i>5<sup>th</sup> Winter School on Cognitive Modeling - 2023</i> <i>Indian Institute of Technology Mandi</i>	Oct 2023
Octalysis Gamification Framework <i>Guest Lecture for undergraduate course Gamification (ECOE-496)</i> <i>Dr B R Ambedkar National Institute of Technology</i>	Feb 2023
Octalysis Gamification Framework <i>Guest Lecture for undergraduate course Gamification (ECX-488)</i> <i>Dr B R Ambedkar National Institute of Technology</i>	Sep 2022
Human Motivation and Engagement Analysis using Octalysis Gamification Framework * <i>Winter School on Cognitive Modeling - 2022</i> <i>Indian Institute of Technology Mandi</i>	Oct 2022
Octalysis * <i>AICTE ATAL Sponsored Online Faculty Development Program on Gamification</i> <i>Dr B R Ambedkar National Institute of Technology</i>	Nov 2020
Arduino and Open-Source Technologies # <i>DAV Institute of Engineering and Technology</i>	Jun 2019
Arduino workshop for kids # <i>Jalandhar</i>	Nov 2017

## GRANTS (\*PI, #CO-PI)

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Nagarro-NITJ Technology Centre of Excellence for Autism Research, <i>Nagarro, CSR Grant #</i> <i>Status: Under review</i>	2024
AI-Driven Multimodal Fusion Framework for Emotion Recognition of Individuals with Autism in – Unconstrained Environments, <i>Futures First, CSR Grant #</i> <i>Status: Under review</i>	2024
Low-Cost Smartwatch for Autism with AI-Enabled Technologies, <i>NXP Semiconductors, CSR Grant #</i> <i>Status: Under review</i>	2024

## HONORS AND AWARDS

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Post Doctoral Fellowship <i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	2022 – 2024
Pre Doctoral Fellowship <i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	2022
Doctoral Fellowship <i>Dr B R Ambedkar National Institute of Technology</i>	2015 – 2022
UGC NET Qualified with JRF <i>University Grants Commission, India</i>	2013
GATE Qualified <i>Ministry of Education, India</i>	2013
University Academic Honor <i>Lovely Professional University</i>	2013
Academic Scholarship <i>Lovely Professional University</i>	2011 – 2013

GATE Qualified <i>Ministry of Education, India</i>	2011
University Academic Honor <i>Guru Nanak Dev University</i>	2010
Academic Scholarship <i>Guru Nanak Dev University</i>	2006 – 2010

## **ACADEMIC SERVICE / OUTREACH ACTIVITY**

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Mind, Brain, and Consciousness Conference (MBCC 2023) <i>Indian Institute of Technology Mandi, Role: Workshop Organizer</i>	Dec 2023
Jury Member; Hackathon 2022 <i>Technology Innovation Hub, Indian Institute of Technology Mandi Role: Jury member</i>	Jul 2022
Toycathon 2021 <i>Ministry of Education, India, Role: Primary Evaluator</i>	Jan 2021
ATAL Online FDP on Gamification <i>Dr B R Ambedkar National Institute of Technology, Role: Assisted in conduction</i>	Nov 2020
GIAN Course on Autism and Assisted Technologies <i>Dr B R Ambedkar National Institute of Technology, Role: Assisted in conduction</i>	Dec 2018

## **MEDIA COVERAGE**

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Raga Bhairavi can lower stress levels: Study explores impact of Indian classical music <i>The Telegraph India, Print and online newspaper</i>	Nov 2024
Young minds dwell on e-concepts <i>The Tribune India, Print and online newspaper</i>	Nov 2017

## **PROFESSIONAL DEVELOPMENT**

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### **Short Term Courses/Workshops/Webinars (Attended)**

The Impact of AI on Gamification and Serious Games <i>Shri Vaishnav Vidyapeeth Vishwavidyalaya</i>	Sep 2024
Development of Simulation Game, “Project PAL” using the SECI Model and Collaborative - Learning Methods <i>Shri Vaishnav Vidyapeeth Vishwavidyalaya</i>	July 2024
Hands on Training and Showcasing: High Density EEG Devices <i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	Mar 2024
Simulation Games: A Bridge between Knowledge and Behaviour <i>Shri Vaishnav Vidyapeeth Vishwavidyalaya</i>	Jan 2024
Machine-Learning advances in Human-Computer Interaction <i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	July 2022
Innovation, IPR and Start-ups <i>Dr B R Ambedkar National Institute of Technology</i>	July 2022
LaTeX for Technical Writing <i>Technology Innovation Hub, Indian Institute of Technology Mandi</i>	June 2022
The Education Factory <i>Dr B R Ambedkar National Institute of Technology</i>	Sep 2020
Machine Learning Using Python <i>Dr B R Ambedkar National Institute of Technology</i>	Sep 2020
Computational Cardiac Engineering - Predictive Modelling and Innovative Sensing Systems <i>Rajasthan Technical University</i>	Sep 2020
Autism and Assisted Technologies (Gian Course) <i>Dr B R Ambedkar National Institute of Technology</i>	Dec 2018

Brain Science & Technology: Tools and Techniques to understand the Human Brain <i>Indian Institute of Technology Delhi</i>	Dec 2016
Biology for Engineers <i>Indian Institute of Technology Bombay</i>	Jun 2016
<b>Certifications</b>	
The Octalysis Framework - Level 1 <i>The Octalysis Group</i>	Dec 2017
<b>MOOC Courses (with certificates)</b>	
IITM – Finland – Certificate course on Mastering VR : Fundamentals to Practice <i>Indian Institute of Technology Madras</i>	Oct 2024
DRONE01x: Drones for Agriculture: Prepare and Design Your Drone (UAV) Mission <i>Wageningen University &amp; Research</i>	Sep 2022
Statistics in Medicine <i>Stanford University</i>	Mar 2020
Computer Science 101 <i>Stanford University</i>	Mar 2020
Introduction to CAD: Learn Fusion 360 in 90 minutes <i>Autodesk</i>	Sep 2019
Vital Signs: Understanding What the Body Is Telling Us <i>University of Pennsylvania</i>	May 2018
Advanced MATLAB for Scientific Computing <i>Stanford University</i>	Dec 2017
Introduction to Game Development <i>Michigan State University</i>	Mar 2017
Calculus One <i>The Ohio State University</i>	May 2013
Image and video processing <i>Duke University</i>	Mar 2013

## PROFESSIONAL MEMBERSHIP

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Association for Computing Machinery (ACM) <i>Professional Member</i>	Aug 2023 – Jul 2024
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## EDITORIAL REVIEW BOARD

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International Journal of Game-Based Learning (IJGBL); <i>IGI Global</i>
International Journal of Gaming and Computer-Mediated Simulations (IJGCMS); <i>IGI Global</i>
International Journal of Distance Education Technologies (IJDET); <i>IGI Global</i>

## AD-HOC REVIEWER

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Discover Psychology; <i>Springer Nature</i> (3)
iScience; <i>Cell Press</i> (4)
Heliyon; <i>Cell Press</i> (3)
SoftwareX; <i>Elsevier</i> (5)
HardwareX; <i>Elsevier</i> (3)
Biomedical Signal Processing and Control; <i>Elsevier</i> (4)
Games for Health Journal; <i>Mary Ann Liebert, Inc.</i> (2)
International Journal of Gaming and Computer-Mediated Simulations (IJGCMS); <i>IGI Global</i> (9)

International Journal of Game-Based Learning (IJGBL); *IGI Global* (4)  
 International Journal of Distance Education Technologies (IJDET); *IGI Global* (4)

## INDUSTRY/STARTUP EXPERIENCE

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T4A Labs Pvt Ltd., Incubated in NITJ Technology Business Incubator Apr 2022 – Present  
 Role: Co-Founder, Works on technologies for autistic kids and autism.

## SKILLS

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**Programming:** Assembly, C, C++, R, Lua, MATLAB, Python, Visual Basic  
**Applications:** NI Multisim, KiCad, Unity3D, RStudio, JASP, Autodesk Fusion 360, Pure Data  
**Operating Systems:** Windows, Ubuntu  
**Others:** Octalysis-Level1 Expert

## PROJECTS

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### ICT mediated teaching pedagogy and content/ Development of new and innovative courses and curricula

Arduino Workshop for Kids E-Book <i>Dr B R Ambedkar National Institute of Technology</i>	2022
Gamification (ECX-488) Course E-Book, 3 Credits <i>Dr B R Ambedkar National Institute of Technology</i>	2021
Classroom Gamification, Software Tool, 3 Credits <i>Dr B R Ambedkar National Institute of Technology</i>	2018
Gamification (ECX-488), Course, 3 Credits <i>Dr B R Ambedkar National Institute of Technology</i>	2016

### Other Projects

AfDaq: A plug and play MATLAB based tool for biofeedback and arduino based instruments	2021
BioNES: A plug-and-play MATLAB based tool to use NES games for multimodal biofeedback	2021
MCP4251: Arduino library for MCP4251 Digital Potentiometer	2021
classroom-gamification: Tool to gamify your classroom with an online leaderboard	2018

## SUBJECTS TAUGHT

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<b>Teaching Assistant (PhD Student)</b> <i>Dr B R Ambedkar National Institute of Technology</i>	2015 – 2020
Gamification, ECX-488	Spring 2020
Scientific Computing Lab, ECPC-351	Spring 2020
Gamification, ECX-488	Fall 2019
Scientific Computing Lab, ECPC-351	Fall 2019
Gamification, ECX-488	Spring 2019
Electronics for Chemists Lab, CY-592	Spring 2019
Gamification, ECX-488	Fall 2018
Analysis and Synthesis of Networks Lab, ECX-211	Fall 2018
Gamification, ECX-488	Spring 2018
Electronics for Chemists Lab, EC-636	Spring 2018
Gamification, ECX-488	Fall 2018
Analysis and Synthesis of Networks, ECX-201	Fall 2018
Analysis and Synthesis of Networks Lab, ECX-211	Fall 2018

Gamification, ECX-488	Spring 2017
Basic Electronics Lab, ECX-102	Spring 2017
Gamification, ECX-488	Fall 2016
Analysis and Synthesis of Networks Lab, ECX-211	Fall 2016
Gamification, ECX-488	Spring 2016
Basic Electronics Lab, ECX-102	Spring 2016
Basic Electronics Lab, ECX-102	Fall 2015
<b>Assistant Professor</b>	2013 – 2015
<i>Lovely Professional University</i>	
Digital Signal Processing, ECE300	Spring 2015
Digital Signal Processing Laboratory, ECE324	Spring 2015
Analytical Skills-II, PEA302	Spring 2015
Adaptive Signal Processing, ECE531	Fall 2014
Signal and Systems, ECE220	Fall 2014
Basic Simulation Laboratory, CSE222	Fall 2014
Electronic Devices and Circuits, ECE206	Summer 2014
Digital Signal Processing, ECE300	Spring 2014
Probability and Stochastic Processes, ECE256	Spring 2014
Digital Signal Processing Laboratory, ECE324	Spring 2014
Electronic Devices and Circuits, ECE206	Fall 2013
Basic Electrical Engineering, ECE133	Fall 2013
Analog and Linear Integrated Circuits Laboratory, ECE317	Fall 2013
Basic Electrical Engineering Laboratory, ECE134	Fall 2013
<b>Teaching Assistant (MTech student)</b>	2011 – 2013
<i>Lovely Professional University</i>	
Introduction to Practical Electronics, ECE100	Fall 2012
Electrical and Electronics Workshop, ECE130	Spring 2012
<b>Lecturer</b>	2010 – 2011
<i>Lovely Professional University</i>	
Microcontroller and Applications, ECE310	Spring 2010
Introduction to Practical Electronics, ECE100	Spring 2010
Unified Electronics Laboratory – II, ECE208	Spring 2010

## SPORTS ACTIVITIES

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Annual Faculty Sports Meet	2015
<i>Lovely Professional University</i>	
<i>100 mt. (Gold), 200 mt. (Gold)</i>	
Annual Faculty Sports Meet	2014
<i>Lovely Professional University</i>	
<i>200 mt. (Bronze – 28.12 sec), 400 mt. (Silver – 1.06 min)</i>	
Annual Faculty Sports Meet	2011
<i>Lovely Professional University</i>	
<i>100 mt. (Gold)</i>	

## LANGUAGES

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English (Advanced), Hindi (Native), Punjabi (Native)

## REFERENCES

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### **Prof. Arun Khosla**

*Professor, Department of ECE, Dr B R Ambedkar National Institute of Technology, Jalandhar, India – 144011*

[khoslaak@nitj.ac.in](mailto:khoslaak@nitj.ac.in)

*Professional Engagement: PhD Supervisor*

### **Prof. Mamta Khosla**

*Professor, Department of ECE, Dr B R Ambedkar National Institute of Technology, Jalandhar, India – 144011*

[khoslam@nitj.ac.in](mailto:khoslam@nitj.ac.in)

*Professional Engagement: Former Head of Department*

### **Prof. Varun Dutt**

*Professor, School of Computing and Electrical Engineering, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh, India – 175075*

[varun@iitmandi.ac.in](mailto:varun@iitmandi.ac.in)

*Professional Engagement: Post Doctoral Supervisor*

### **Gaganpreet Singh**

*Senior Software Developer, Microsoft India*

[gagsin@microsoft.com](mailto:gagsin@microsoft.com)

*Professional Engagement: Former coworker*