



Toshika Lata

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Profile

Toshika Lata is an emerging researcher and educator working at the intersection of artificial intelligence, machine learning, and biomedical signal analysis. As a Senior Faculty Associate in the Faculty of Science and Technology (IcfaiTech) at The ICFAI University, Jaipur, since 2023, she combines active teaching responsibilities with a growing research portfolio centred on intelligent health-monitoring systems.

Toshika holds a Master of Computer Applications from Govt. Engineering College, Bikaner (Rajasthan Technical University, Kota), and a Bachelor of Computer Applications from Shri Jain Girls College, Bikaner (Maharshi Dayanand Saraswati University). She is currently pursuing her Ph.D. in Computer Applications at The ICFAI University, Jaipur, where her doctoral research, titled “Pain Level Assessment through Facial Expressions and Physiological Signal Modalities Using Hybrid ML Techniques,” explores automated pain assessment using the BioVid Heat Pain Dataset. Her work applies hybrid deep-learning architectures—including CNN-BiLSTM, CrossMod-Transformer, and dual-stream Transformer models with masked autoencoder pre-training—to classify low pain levels from multimodal facial and physiological signals, supported by a PSPI-based video scoring pipeline built with Python and py-feat.

Alongside her primary thesis work, she leads a secondary research effort on a wearable, explainable-AI system for detecting Patellofemoral Pain Syndrome using EMG and IMU signals, employing a CNN-BiLSTM-Attention architecture optimised with a genetic algorithm. In a 45-subject pilot study, this system achieved an AUC-ROC of approximately 0.99, reflecting her ability to translate complex machine-learning pipelines into clinically meaningful outcomes.

Her research has been recognised at ICCORIS 2026, where her review paper, “Intelligent Pain Prediction: Emerging Machine Learning and Deep Learning Techniques,” was presented, and she is currently preparing IEEE-formatted manuscripts on biosignal-based pain prediction and on the wearable Patellofemoral Pain Syndrome detection system.

As a faculty member, Toshika teaches Python, C, C++ (Object-Oriented Programming), Java, Linux and Shell Programming, Web Technology, Artificial Intelligence, and Computer Fundamentals, and serves as a course coordinator responsible for course files, CO-PO mapping, examination papers, and laboratory material design. Her technical toolkit spans Python, C, C++, Java, C#, and PHP, along with deep-learning frameworks such as PyTorch and TensorFlow, and research tools including LaTeX, Overleaf, and Zotero. Prior to academia, she gained industry experience as a web developer and software tester, working on HTML, CSS, JavaScript, ReactJS, and PHP/Magento-based projects.

Toshika holds a Certificate of Presentation from ICCORIS 2026 and has completed NPTEL's "Problem Solving through Programming in C" course offered by IIT Kharagpur. Her continuing focus on explainable AI, multimodal signal processing, and wearable health-monitoring technologies reflects a research trajectory aimed at building intelligent, trustworthy systems for real-world clinical and healthcare applications.