Declaration

I, Sumpi Saikia, hereby declare that the thesis entitled *Classification of Dynamic Gestures of Sattriya Dance from Video* submitted to the Department of Computer Science and Engineering under the School of Engineering, Tezpur University, in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy is based on bonafide work carried out by me. The results embodied in this thesis have not been submitted in part or in full, to any other university or institute for award of any degree or diploma.

(Sumpi Saikia)

Tezpur University

Certificate

This is to certify that the thesis entitled *Classification of Dynamic Gestures of Sattriya Dance from Video* submitted to Tezpur University in the Department of Computer Science and Engineering under the School of Engineering in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy in Computer Science is a record of research work carried out by Mrs. Sumpi Saikia under my personal supervision and guidance.

All helps received by her from various sources have been duly acknowledged.

No part of this thesis has been reproduced elsewhere for award of any other degree.

Signature of Research Supervisor

(Sarat Saharia)

Designation: Professor

School: Engineering

Department: Computer Science and Engineering

Tezpur University

Tezpur University

Certificate

This is to certify that the thesis entitled *Classification of Dynamic Gestures of Sattriya Dance from Video* submitted by Mrs. Sumpi Saikia to Tezpur University in the Department of Computer Science and Engineering under the School of Engineering in partial fulfillment of the requirements for the award of the degree of Doctor of Philosophy in Computer Science has been examined by us on ……………………..and found to be satisfactory.

The Committee recommends for award of the degree of Doctor of Philosophy.

Signature of

Principal Supervisor   External Examiner
Date: Date:

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Glossary of Terms

AdaBoost   Adaptive Boosting

AI   Artificial Intelligence

ArSL   Arabic Sign Language

ASL   American Sign Language

ASM   Angular Second Moment

CNN   Convolutional Neural Network

DAG   Directed Acyclic graph

DTW   Dynamic Time Warping

EN   Inter-frame energy difference

EP   Inter-frame entropy difference

FA   Facing Around

FF   Facing Front

FSM   Finite State Machine

GPU   Graphics Processor Unit

HCI   Human-Computer Interaction

HMM   Hidden Markov Model

HW   Height to Width ratio

ICD   Indian Classical Dance

JSL	Japanese Sign Language
KNN	K- Nearest Neighbour
KSL	Korean Sign Language
LSTM	Long Short-Term Memory
MBR	Minimum Bounding Rectangle
MLP	Multilayer Perceptron
PCA	Principal Component Analysis
R-CNN	Region-based CNN
RNN	Recurrent Neural Network
SDAE	Stacked Denoising Autoencoder
SDGE	Sattriya Dance Ground Exercise
SFM	Spatial Fuzzy Matching
SIFT	Scale Invariant Feature Transform
SVM	Support Vector Machine
TDNN	Time-Delay Neural Network
TSL	Taiwanese Sign Language
XGBoost	Extreme Gradient Boosting