

Pratyusha Das

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Summary

An Electrical Engineering professional with experience in signal processing, machine learning, deep learning, and computer vision. Two year's industry experience working with physiological signals and healthcare data. Experience in handling real-world data and adapting that to machine learning models. Many years of teaching and mentoring experience further helped me to gain leadership and people management skills.

Education

University of Southern California , CA, USA	August 2017 - Present
<i>Ph.D.</i> in Electrical and Computer Engineering, Advisor. Prof. Antonio Ortega	
Jadavpur University , Kolkata, India	2013 - 2015
<i>Masters</i> in Electronics and Telecommunication Engineering CGPA (9.8/10)	
Maulana Abdul Kalam Azad University of Technology , Kolkata, India	2009 - 2013
<i>Bachelors</i> in Electronics and Communication Engineering CGPA (8.94/10)	

Work Experience

AI-ML Research Intern, [NOKIA Bell Labs](#), New Jersey, June 2021 – August 2021

- Developed ML-based Smart Feed Recommendation system for real-word data.

Graduate Research Assistant, [University of Southern California](#), Los Angeles, CA, August 2017 – Present

- In collaboration with [MERL](#) - Mitsubishi Electric Research Laboratories Massachusetts, USA.

Graduate Teaching Assistant, [University of Southern California](#), Los Angeles, CA, January 2019 - December 2020

- Taught Linear Algebra for Engineering (EE-510), Applied Linear Algebra for Engineering (EE-141), Pattern Recognition (EE-559), and Introduction to Electrical Engineering (EE-105).

Researcher, [TCS Innovation Labs](#), Kolkata, India, July 2015 - July 2017

- Physiological signal analysis for students' stress management
- Tele-rehabilitation for elderly using markerless Motion-capture data.

Projects

Ph.D. candidate, USC : Computation understanding of human motion using graph based techniques: 2017 - Present:

- Designing interpretable graphs based spatio-temporal representation for hand motion data analysis.
- Analyzing characteristics of human anatomy inspired graph, exploiting them to design efficient and robust spatio temporal Graph Convolutional Neural Network.
- Explainability of spatio-temporal graph neural network.
- Graph based motion capture data compression.

Research Intern, Nokia Bell Labs, NJ, ML based Smart Feed Recommendation system, June 2021 - August 2021:

- Developed a machine learning based feed recommendation system which can handle text inputs.

Researcher, TCS Innovation Labs, India, Physiological signal processing for students' stress analysis, 2015 - 2017:

- Data acquisition of physiological signals (EEG, GSR, HRV) of subjects (engineering colleges students).
- Developed method to analyze and quantify students' stress in real time.

Patents

- R Gavas, R Das, **P Das**, et al. [Method and system for determining inactive state and its implication over cognitive load computation of person](#), Patent Granted.
- **P Das**, et al. [Method and system for monitoring of mental effort](#), Patent granted.
- D Das, T Bhattacharjee, S Datta, AD Choudhury, **P Das**, et al. [System and method for classification and quantitative estimation of cognitive stress](#), US Patent App. 15/913,731, Patent Pending.
- **P Das**, et al. Method and system for correcting data captured using a motion sensor, Filing no. 201621043944, December 22, 2016. Patent Pending.
- D Chatterjee, **P Das**, et al. Method and system for evaluation of online tutorial, Filing no. 201621039486, November 18, 2016. Patent Pending.

- A Sinha, D Chatterjee, K Chakravarty, R Gavas, **P Das**, *et al.* [System and method for digitized symbol substitution test](#), Filing no. 201621036029, October 21, 2016. Patent Pending.
- A Sinha, **P Das**, *et al.* System and method for training a model for estimating guess work using physiological sensing, Filing no. 201621034850, October 12, 2016. Patent Pending.

Journal Publications

- **P Das**, *et al.* [Improving joint position estimation of Kinect using anthropometric constraint based adaptive Kalman filter for rehabilitation](#), IOPscience 2018.
- D Bhattacharya, A Konar, **P Das**, [Secondary factor induced stock index time-series prediction using Self-Adaptive Interval Type-2 Fuzzy Sets](#), Elsevier 2015.

Conference Publications

- **P Das**, *et al.* Towards a geometric understanding of Spatio Temporal Graph Convolution Networks, submitted WACV 2023.
- **P Das**, *et al.* [Gradient-Weighted Class Activation Mapping for Spatio Temporal Graph Convolutional Network](#), CVPR workshop 2022.
- **P Das**, *et al.* [Gradient-Weighted Class Activation Mapping for Spatio Temporal Graph Convolutional Network](#), ICASSP 2022.
- **P Das**, *et al.* [Application-agnostic spatio-temporal hand graph representations for stable activity understanding](#), ICIP 2021.
- **P Das**, *et al.* [Symmetric Sub-graph Spatio-Temporal Graph Convolution and its application in Complex Activity Recognition](#), ICASSP 2021.
- **P Das**, *et al.* [Graph-based skeleton data compression](#), MMSP 2020.
- **P Das**, *et al.* [Graph Representations for Unsupervised segmentation of complex activities](#), ICASSP 2019.
- D Das, T Bhattacharjee, S Datta, AD Choudhury, **P Das**, *et al.* [Classification and quantitative estimation of cognitive stress from in-game keystroke analysis using EEG and GSR](#), LSC 2017.
- **P Das**, *et al.* [Improvement in Kinect based measurements using anthropometric constraints for rehabilitation](#), ICC 2017.
- R Gavas, R Das, **P Das** *et al.* [Inactive-State Recognition from EEG Signals and its Application in Cognitive Load Computation](#), SMC 2016.
- **P Das**, *et al.* [A System for Remote Monitoring of Mental Effort](#), ICCE 2016.
- A Sinha, **P Das**, *et al.* [Physiological Sensing based Stress Analysis during Assessment](#), FIE 2016.
- R Kar, **P Das**, *et al.* [Fuzzy rule enhanced support vector machines for classification of emotions from brain networks](#), CIEC 2016.
- **P Das**, *et al.* [Adaptive fuzzy type-1 based person identification](#), IET 2015.
- **P Das**, *et al.* [Arduino based multi-robot stick carrying by Artificial Bee Colony optimization algorithm](#), C3IT 2015.
- **P Das**, *et al.* [Adaptive Parameterized AdaBoost Algorithm with application in EEG Motor Imagery Classification](#), IJCNN 2015.
- A Saha, A Konar, **P Das**, *et al.* [Data-point and Feature Selection of Motor Imagery EEG Signals for Neural Classification of Cognitive Tasks in Car-Driving](#), IJCNN 2015.
- **P Das**, *et al.* [Type 2 fuzzy induced person identification using Kinect sensor](#), FUZZ-IEEE 2015.
- AK Sadhu, **P Das**, *et al.* [Online Template Matching Using Fuzzy Moment Descriptor](#), Springer 2014.

Complete publication list can be [here](#).

Achievement

- Received [WiSE Qualcomm Top-off Fellowship](#) 2021.
- Received Best poster (honorable mention) in [USC MHI research festival](#) 2021.
- Received "TCS i-Citation Award" (2016 and 2017).
- Honored with Gold Medals for being the department and University topper in Master of Engineering 2015, Jadavpur University.
- Received best paper awards in [MFIS 2015](#) and [CIEC 2016](#).
- Received [GATE](#) scholarship from AICTE in 2013.

Extra curriculum Activities

- Serving as a reviewer at [IEEE signal processing letters](#).
- Serving as a mentor at [USC WISE](#), [USC VITERBI](#), [USC WIE](#) mentorship program.
- *President* and *founding member* at USC recognized student organization [BALAKA](#): Bengali Association of USC
- *Director* at [VIDUSHAK](#): Improv comedy group of USC.