ARINDAM JATI

CONTACT INFORMATION

3740 McClintock Avenue, Room EEB B16
University of Southern California
Los Angeles, CA 90089-2564, USA

Cell: +1 (213) 716-1074
E-mail: jati@usc.edu
Web-page: `www.arindamjati.com`

RESEARCH INTERESTS

Machine learning, deep learning, behavioral signal processing, speech and audio processing, speech recognition, speaker recognition

EDUCATION

University of Southern California (USC), Los Angeles, CA, USA August, 2015 - present
PhD candidate, Advisor: Prof. Panayiotis Georgiou
Signal Processing for Communication Understanding and
Behavior Analysis Laboratory (SCUBA)
Ming Hsieh Department of Electrical Engineering
Current GPA: 3.91/4.0

Jadavpur University, Kolkata, India June, 2013
Bachelor of Engineering (BE) in Electonics and Telecommunication Engineering
GPA: 9.43/10.0

WORK EXPERIENCE

Sony Interactive Entertainment America LLC
AI Intern June, 2018 to Aug, 2018
Manager: Dr. Ruxin Chen

Polaris Networks, Kolkata, India
Software Engineer - II July, 2014 to June, 2015
Software Engineer - I July, 2013 to June, 2014

School of Medical Science and Technology, IIT Kharagpur, India
Intern at **Biostatistics and Medical Informatics Laboratory** Dec, 2011 to Jan, 2012
Advisor: Prof. Chandan Chakraborty

Department of Electonics and Telecommunication Engineering
Jadavpur University, India 2009 to 2013
Advisor: Prof. Amit Konar

TEACHING EXPERIENCE

Teaching Assistant (TA)
USC EE 599: Deep Learning Spring 2019

Teaching Assistant (TA)
USC EE 599: Deep Learning Lab for Speech Processing Fall 2018

Teaching Assistant (TA)
USC EE 559: Mathematical Pattern Recognition Spring 2018

Teaching Assistant (TA)
USC EE 483: Digital Signal Processing Fall 2017

Current projects at SCUBA, USC

- **Unsupervised domain adaptation of speaker embedding:** Develop unsupervised domain adaptation techniques for a speaker embedding when no speaker homogeneous regions are available in the target domain.
- **Semi-supervised multi-task learning:** Training deep neural networks that can learn to denoise speech, do speaker activity detection, and learn speaker characteristics in a semi-supervised setting.
- **Unsupervised learning of speaker characteristics:** Training deep neural networks that can learn speaker-specific characteristics from unlabeled multi-speaker audio streams, and its application on speaker classification and diarization.
- **Predicting physiology indicative of stress from acoustics:** Predicting physiology (like heart rate, respiratory sinus arrhythmia, blood pressure etc.) from acoustic features during stressful conversations between humans.

Patents

1. **Arindam Jati**, Naveen Kumar, Ruxin Chen,"Sound Categorization System", US Patent under review, 2018.
2. **Arindam Jati**, Sudha Krishnamurthy, Justice Adams, Masanori Omote, and Jian Zheng,"Scene Annotation using Machine Learning", US Patent under review, 2018.

Graduate Publications

1. **Arindam Jati**, Naveen Kumar, Ruxin Chen, and Panayiotis Georgiou, *"Hierarchy-Aware Loss Function on a Tree Structured Label Space for Audio Event Detection"*, Accepted in ICASSP 2019.
2. **Arindam Jati** and Panayiotis Georgiou, *"An unsupervised neural prediction framework for learning speaker embeddings using recurrent neural networks"*, In Interspeech, 2018.
3. **Arindam Jati** and Panayiotis Georgiou, *"Neural Predictive Coding using Convolutional Neural Networks towards Unsupervised Learning of Speaker Characteristics"*, Under review in IEEE/ACM Transactions on Audio, Speech, and Language Processing, Preprint available at https://arxiv.org/abs/1802.07860, 2018.
4. **Arindam Jati**, Paula G. Williams, Brian Baucom and Panayiotis Georgiou, *"Towards Predicting Physiology from Speech During Stressful Conversations: Heart Rate and Respiratory Sinus Arrhythmia"*, In ICASSP, 2018.
5. Paula G. Williams, Brian Baucom, **Arindam Jati**, and Panayiotis Georgiou, *"Physiological and Affective Responses to Stress are Encoded in Vocal Acoustic Properties"*, Paper presented at the 76th annual meeting of the American Psychosomatic Society, Louisville, KY, 2018.
6. **Arindam Jati** and Panayiotis Georgiou, *"Speaker2Vec: Unsupervised Learning and Adaptation of a Speaker Manifold using Deep Neural Networks with an Evaluation on Speaker Segmentation"*, Proceedings of Interspeech, 2017.
7. Md Nasir, **Arindam Jati**, Prashanth Gurunath Shivakumar, Sandeep Nallan Chakravarthula, and Panayiotis Georgiou, *"Multimodal and Multiresolution Depression Detection from Speech and Facial Landmark Features"*, Proceedings of the 6th ACM International Workshop on Audio/Visual Emotion Challenge (AVEC). ACM, 2016.

Undergrad Journal Publications

1. **Arindam Jati**, Garima Singh, Subhranil Koley, Amit Konar, A. K. Ray, Chandan Chakraborty, *"A novel segmentation approach for noisy medical images using Intuitionistic fuzzy divergence with neighbourhood-based membership function"*, Journal of Microscopy, Wiley, 2014.
2. Anwesha Khasnobish, **Arindam Jati**, Garima Singh, Amit Konar and D. N. Tibarewala, *"Object-shape recognition by tactile image analysis using support vector machine"*, International Journal of Pattern Recognition and Artificial Intelligence, World Scientific, 2014.

3. **Arindam Jati**, Garima Singh, Rashmi Mukherjee, Madhumala Ghosh, Amit Konar, Chandan Chakraborty, Atulya K. Nagar, *"Automatic leukocyte nucleus segmentation by intuitionistic fuzzy divergence based thresholding"*, Micron, Elsevier, 2014.
4. Anwesha Khasnobish, Garima Singh, **Arindam Jati**, Amit Konar & D. N. Tibarewala, *"Object-shape recognition and 3D reconstruction from tactile sensor images"*, Medical & Biological Engineering & Computing, Springer, 2014.

Undergrad Conference Publications

1. Anwesha Khasnobish, **Arindam Jati**, Garima Singh, Saugat Bhattacharyya, Amit Konar, D. N. Tibarewala, Eunjin Kim, Atulya K. Nagar, *"Object-shape recognition from tactile images using a feed-forward neural network"*, The International Joint Conference on Neural Networks (IJCNN), IEEE, 2012.
2. **Arindam Jati**, Garima Singh, Pratyusha Rakshit, Amit Konar, Eunjin Kim, Atulya K. Nagar, *"A hybridisation of Improved Harmony Search and Bacterial Foraging for multirobot motion planning"*, IEEE Congress on Evolutionary Computation 2012: 1-8.
3. Anwesha Khasnobish, Saugat Bhattacharyya, Garima Singh, **Arindam Jati**, Amit Konar, D. N. Tibarewala, R. Janarthanan, *"The Role of Empirical Mode Decomposition on Emotion Classification Using Stimulated EEG Signals"*, International Conference on Advances in Computing and Information Technology (ACITY), 2012.
4. Garima Singh, **Arindam Jati**, Anwesha Khasnobish, Saugat Bhattacharyya, Amit Konar, D. N. Tibarewala and Atulya Nagar, *"Object Shape Recognition from Tactile Images Using Regional Descriptors"*, Fourth World Congress on Nature and Biologically Inspired Computing (NaBIC), IEEE, 2012.
5. Garima Singh, **Arindam Jati**, Anwesha Khasnobish, Saugat Bhattacharyya, Amit Konar, D. N. Tibarewala and R. Janarthanan, *"Negative emotion recognition from stimulated EEG signals"*, International Conference on Computing Communication & Networking Technologies (ICCCNT), IEEE, 2012.
6. Garima Singh, **Arindam Jati**, Anwesha Khasnobish, Saugat Bhattacharyya, Amit Konar, D. N Tibarewala, R Janarthanan, *"A Comparative Analysis of Emotion Recognition from Stimulated EEG Signals"*, Second International Conference on Soft Computing for Problem Solving (SocProS), December, 2012.
7. Garima Singh, Anwesha Khasnobish , **Arindam Jati**, Saugat Bhattacharyya, Amit Konar, D. N. Tibarewala and R. Janarthanan, *"Object-shape classification and reconstruction from tactile images using image gradient"*, International Conference on Emerging Applications of Information Technology (EAIT), 2012.
8. Anisha Halder, **Arindam Jati**, Garima Singh, Amit Konar, Aruna Chakraborty, Ramadoss Janarthanan. *"Facial Action Point Based Emotion Recognition by Principal Component Analysis"*, The International Conference on Soft Computing for Problem Solving (SocProS), 2011.

Relevant Graduate Courses

Digital signal Processing	Pattern recognition	Algorithms
Probability	Machine learning	Affective computing
Random processes	Natural language processing	Wavelets and graph signal processing

Course Projects

- Wavelets and graph signal processing: Sparse Representation of Deep Neural Network Embeddings for Speaker Identification
- Affective Computing: End-To-End Speech Negotiations with Affective Speech Rollout
- Pattern Recognition: Predicting Readmission of Diabetic Patients from Medical Records
- Machine Learning: Santander Customer Satisfaction Classication
- Natural language processing: Automatic Solver for Mad Gab - A Language Game

Skills

Programming: Python, C/C++, Bash, MATLAB
Machine learning tools: Pytorch, Keras, Tensorflow, Scikit-learn
Other tools: KALDI, OpenSMILE, OpenFST, Carmel, Git, SPSS, LaTeX
OS: Unix, Windows

Journal/Conference Reviewer

- Reviewer of *IEEE Signal Processing Letters*.
- Reviewer of *20th ACM International Conference on Multimodal Interaction (ICMI 2018)*.

Major Awards

- Honorable mention (3^{rd} place) in Summer 2018 Hackathon at Sony Interactive Entertainment America LLC.
- Received ISCA travel grant award for students and young scientists for Interspeech 2017 conference.
- Received Annenberg PhD Fellowship at USC.