Dipan K. Pal

Contact Information

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Electrical and Computer Eng.
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Research Interests

Perception, vision, deep learning, sparse signal processing, neuro inspired models of vision, biometrics

Education

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Ph.D. , Electrical and Computer Eng. **Aug, 2014 - present**

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

M.S., Electrical and Computer Eng. **Aug, 2012 - Dec, 2013**

Birla Institute of Technology, Mesra, India

B.E., Electronics and Communication Eng. **Sep, 2008 - Jun, 2012**
Graduated First Class with Disctinction

Honors and Awards

Carnegie Institute of Technology, Dean Fellowship, 2014

Bachelor thesis was awarded the TCS Best Student Project Award by Tata Consultancy Services

Certificate of Merit, State wise Top 1%, Indian Physics Olympiad, 2007

Relevant Coursework

Probabilistic Graphical Models ; Statistical Machine Learning; Advanced Introduction to Machine Learning; Convex Optimization; Intermediate Statistics; Machine Learning; Pattern Recognition; Planning, Execution and Learning; Machine Learning in Large Datasets; Stochastic Optimization; Compressed Sensing and Sparse Optimization; Deep Learning; Intermediate Statistics; Computational Models of Neural Systems

In The Pipeline

Dipan K. Pal, Vishnu N. Boddeti and Marios Savvides, *Emergence of Selective Invariance for Object Categorization through Adaptive Pooling* (under review at CVPR 2017)

Dipan K. Pal, Ashwin A. Kannan*, Gautam Arakalgud* and Marios Savvides, *Max-margin Invariant Features: Unitary-Group Invariant Kernels from Transformed Unlabeled Data* (under review at CVPR 2017, * indicates equal contribution)

T. Hoang Ngan Le, Ligong Han, **Dipan K. Pal** and Marios Savvides, *Contextual Recurrent Residual Networks for Scene Labeling* (under review at CVPR 2017)

Publications

Dipan K. Pal and Marios Savvides, *Unitary-Group Invariant Kernels and Features from Transformed Unlabeled Data*, http://arxiv.org/abs/1511.05943

Dipan K. Pal and Ole Mengshoel, *Stochastic CoSaMP: Randomizing Greedy Pursuit for Sparse Signal Recovery*, ECML-PKDD 2016

Dipan K. Pal, F. Juefei-Xu and Marios Savvides, *Discriminative Invariant Kernel Features: A Bells-and-Whistles-Free Approach to Unsupervised Face Recognition and Pose Estimation*, CVPR 2016 (spotlight presentation)

F. Juefei-Xu, **Dipan K. Pal**, and M. Savvides, *NIR-VIS Heterogeneous Face Recognition via Cross-Spectral Joint Dictionary Learning and Reconstruction*, CVPRW Perception Beyond the Visual Spectrum Workshop, 2015.

K. Seshadri, F. Xu, **Dipan K. Pal**, M. Savvides and C.P. Thor, *Driver Cell Phone Usage Detection on Strategic Highway Research Program (SHRP2) Face View Videos*, CVPRW Workshop on Computer Vision in Vehicle Technology 2015.

F. Juefei-Xu, **Dipan K. Pal**, K. Singh, and M. Savvides, *A Preliminary Investigation on the Sensitivity of COTS Face Recognition Systems to Forensic Analyst-style Face Processing for Occlusions*, CVPRW Biometrics, 2015.

N. Zehngut, F. Juefei-Xu, R. Bardia, **Dipan K. Pal**, C. Bhagavatula, and M. Savvides. *Investigating the Feasibility of Image-Based Nose Biometrics.* ICIP, Quebec, Canada, Sept 2015.

Shreyas Venugopalan, **Dipan K. Pal**, Marios Savvides, *Exploiting Sparsity in Local Iris Texture Representation: An Iris Spoofing Paradigm*, IEEE TIFS (under review)

Felix J. Xu, **Dipan K. Pal** and Marios Savvides, *Hallucinating the Full Face from the Periocular Region via Dimensionally Weighted K-SVD*, CVPRW Biometrics, 2014

Jun Shi, Ole Mengshoel, **Dipan K. Pal**, *Feedback control for multi-modal optimization using genetic algorithms*, GECCO 2014.

Dipan K Pal, S. S. Tripathy, Viresh Ranjan, Avinash Das, *Robust Content Based Image Retrieval system using Hierarchical Temporal Memory*, ICECT, 2012

Dipan K Pal, *Evaluation of Gabor Filter enhanced Hierarchical Temporal Memories in image classification applications*, IEEE ICCIC, 2011

Dipan K Pal, *Biometric identification using Hierarchical Temporal Memory with face recognition as a case study*, IEEE ICCIC, 2011 (Both IEEE ICCIC and ICECT only published paper proceedings)

Tech Reports/ Projects

Dipan K Pal *Sample Complexity and Pooling Schemes in Theory of Visual Invariance* (Summer 2014, as part of CBMM Summer Course)

Dipan K Pal, Brian Murphy, *Features for learning from EEG signals: Binary classification of semantic states based on EEG* (Spring 2013, under Post-doc with Tom Mitchell)

Dipan K. Pal, *Short-term persistent spiking buffer model of Entorhinal Cortex*, Computational Models of Neural Systems (Fall 2013, course project)

Dipan K Pal, Anders Oland, *Dynamically Biased Rapid exploration of Random Trees (DB-RRT)*, Planning Execution and Learning (Fall 2012, course project)

Dipan K. Pal, Andrea Klein, *Scaling up L1 regularized logistic regression*, Machine Learning with Large Datasets (Spring 2013, course project)

Dipan K. Pal, Benjamin Joyce, Martin Jaszewski, *Face detection using random projections and boosting*, Pattern Recognition (Fall 2012, course project)

Dipan K. Pal, *Extraction and filtration of a depth map using the MESA SR4000 3D Time of Flight camera* (Bhabha Atomic Research Center, Mumbai, Winter 2009)

Dipan K. Pal, *Design of a schematic of a SFP Ethernet interface card on Cadence Orcad* (Indian Institute if Technology, Bombay, Summer 2009)

Professional Experience

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Research Assistant, Biometrics Lab, Cylab **Jan, 2014 - Jul, 2014**

Worked on incorporating sparse signal processing into facial occlusion detection, removal and reconstruction. Also on iris spoofing techniques using sparse signal recovery.

Bhabha Atomic Research Center, Mumbai, India

Research Assistant, Dept. of Remote Handling and Robotics (DRHR) **Nov, 2009 - Dec, 2009**

Project was for use with a KUKA industrial robot for handling nuclear fuel pellets.

Indian Institute of Technology, Mumbai, India

Research Assistant, Gigabit Networking Lab (GNL) **May, 2009 - Jul, 2009**

Project was used in a prototype of a network card.

Computer Skills

- **Languages:** Lua, C++, Python, Java
- **Software:** MATLAB, Torch, Hadoop, EEGLAB, NuPIC 1.7 (Numenta Platform for Intelligent Computing), Cadence Orcad
- **Operating Systems:** Linux, Windows