Parneet Kaur

Ph.D. Candidate

http://parneetk.github.io/

Education

Expected Dec. 2017 — **Ph.D. Candidate, Electrical and Computer Engineering**, *GPA: 3.79/4.0*.
Rutgers University, Piscataway, NJ
Advisor: Dr. Kristin J. Dana

2013 — **M.S., Electrical and Computer Engineering**, *GPA: 3.75/4.0*.
Rutgers University, Piscataway, NJ
Thesis: Automated bridge deck evaluation from ground penetrating radar scans
Advisor: Dr. Kristin J. Dana

2007 — **B.E., Electronics and Communication Engineering**, *Aggregate: 81%*.
Visvesvaraya Technological University, Bangalore, India

Experience

Oct 2011 – Present — **Graduate Assistant**, *Computer Vision Lab*, Rutgers University, NJ.
Research Topics:
Texture analysis, single image super-resolution, multi-view clustering, deep learning

Project: Deep Learning for Skin Analysis
- Collaborating with Johnson & Johnson to develop computational models linking skin appearance and skin microbiome using multi-modal skin imaging and sparse coding.
- Developed hybrid deep learning for automated classification of macroscopic and microscopic skin images.
- Developing multi-view clustering techniques for heterogeneous datasets.

Project: Rebar Analysis for Robotic Bridge Deck Evaluation
- Analyzed ground penetrating radar (GPR) scans to generate bridge deck deterioration maps using Robotic Assessment Bridge Inspection Tool in collaboration with Federal Highway Administration.
- Integrated machine learning classification using image-based gradient features and robust curve fitting of the rebar hyperbolic signature to locate rebars in the GPR images.

May 2016 – Aug 2016 — **Student Associate**, *Vision Systems Group, SRI International*, Princeton, NJ.
- Analyzed skin texture from smart phone and specialized cameras for a major cosmetic company.
- Evaluated pre-trained convolutional neural networks (CNNs) as feature extractors, trained and fine-tuned CNNs by augmenting skin datasets.
- Compared existing techniques for melanoma lesion classification

Fall 2016, Summer 2013, Spring 2012 — **Teaching Assistant**, *Department of Electrical and Computer Engineering*, Rutgers University, NJ.
- *Robotics & Vision*: Held TA office hours, graded assignments and projects. (40 students).
- *Programming Methodology I Lab*: Instructed, designed and graded programming assignments (15+ students).
- *Software Engineering*: Oversaw 12 semester-long projects, graded exams and project reports (70+ students).

Jun 2011 – Sep 2011 — **Intern**, *Broadcom Corporation*, Yardley, PA.
- Developed a software prototype for video stabilization in high-definition televisions.
- Implemented visualization of various motion vector fields.
- Analyzed impact of decimation and interpolation techniques on frame rate conversion algorithm.

Oct 2007 – Sep 2009 — **Software Engineer**, *Robert Bosch Engineering and Business Solutions Limited*, Bangalore, India.
- Developed software for real-time embedded systems deployed in automobile platforms.
- Conducted requirements analysis, software design and implementation, unit and integration testing, and software peer reviews.

Technical Skills

C, C++, MATLAB, Caffe, MatConvNet, OpenCV, Visual Studio, Git

Graduate Coursework

Machine Vision, Advanced Computer Vision, Machine Learning, Pattern Recognition, Convex Optimization, Regression Analysis, Digital Signals and Filters, Optimum Signal Processing, Stochastic Signals & Systems, Computer Architecture

Publications

P. Kaur, K. J. Dana and G. O. Cula, "Deep Learning for Super-Resolution". [Manuscript in preparation]

P. Kaur, K. J. Dana and G. O. Cula, "Appearance-driven Multiview Co-clustering". [Manuscript submitted]

P. Kaur, K. J. Dana, G. O. Cula and C. Mack, "Hybrid Deep Learning for Reflectance Confocal Microscopy Skin Images," 2016 23rd International Conference on Pattern Recognition, 2016.

P. Kaur, K. J. Dana and G. O. Cula, "From photography to microbiology: Eigenbiome models for skin appearance," 2015 IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Boston, MA, 2015, pp. 1-10.

P. Kaur, K. J. Dana, F. A. Romero and N. Gucunski, "Automated GPR Rebar Analysis for Robotic Bridge Deck Evaluation," in IEEE Transactions on Cybernetics, vol. 46, no. 10, pp. 2265-2276, Oct. 2016.

Posters

P. Kaur, K. J. Dana, G. O. Cula. *Computational models to link skin appearance and skin microbiome*. Women in Computer Vision Workshop, IEEE conference on Computer Vision and Pattern Recognition (CVPRW). (Jun 2016)

P. Kaur, K. J. Dana, F. A. Romero, N. Gucunski. *Computer vision for automated bridge deck evaluation from Ground Penetrating Radar Scans*. 3rd GNY Area Multimedia and Vision Meeting, The City College of New York, New York, USA. (Jun 2013)

P. Kaur, P. Prasanna, K. J. Dana. *Applications of Computer Vision in Civil Engineering*. First Multimedia and Vision Meeting for the Greater New York area, Stevens Institute of Technology New York, USA. (Feb 2012)

P. Kaur, P. Prasanna, K. J. Dana. *Real Time Hand Gesture Recognition and Blink Detection*. Rutgers Day-2010 (with demonstration). (Apr 2011)

Awards

- ECE PhD Research Excellence Award. (2016)
- Google Anita Borg Memorial Scholarship. (2016)
- TA/GA Professional Development Fund Award, Rutgers University. (Spring 2016, Summer 2016)
- Coached and designed project for a middle school student, who received an honorable mention for a national level competition by ProjectCSGIRLS. (2015)
- Charles Pankow National Award for Innovation, awarded by the American Society of Civil Engineers (ASCE) to Robotic Assessment Bridge Inspection Tool. Contribution: analysis of GPR scans. (2014)

Extracurricular Activities

- Co-founder and President, Novice-to-Expert coding club at Rutgers University. (Mar. 2016 - present)
- Internal Vice President, Society of Women Engineers Graduate Chapter at Rutgers University. (Nov. 2015 - present)
- Mentor for the 1000 Girls, 1000 Futures program from New York Academy of Sciences, The Academy at Rutgers for Girls in Engineering & Technology and ProjectCSGIRLS.