HARIPRASAD KANNAN
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ACADEMIC PROFILE

Master of Science (Thesis), Electrical Engineering   Dec 2005
Clemson University, Clemson, SC, USA
Area: Robot Control

Bachelor of Technology, Electrical Engineering   August 2002
Indian Institute of Technology Madras

EXPERIENCE

Microsoft India, Bangalore   August 2013-September 2014
Research Software Development Engineer II, Bing Ads team.
- Owned new ingredients for the click prediction part of the Ad system through the entire process: study, training, deployment and tracking.

Read-Ink Technologies Pvt Ltd, Bangalore   April 2012-August 2013
Research Engineer, worked on online handwriting recognition.
- Robust determination of parameters for better recognition of difficult character patterns.

Samsung India Software Operations Pvt Ltd, Bangalore   June 2008 – March 2012
Lead Engineer, developing software prototypes to showcase technical ideas.
Implemented the following projects from study to testing and presentation:
- Head tracking across pose variation using an adaptive model (based on sequential PCA) and particle filtering.
- Head pose estimation by matching face parts using pictorial structures, given kinect output.
- Other face/head gesture work: Head nod analysis using optical flow; Elliptical head tracking; Detecting onset of facial expression based on matching image descriptors.
- A team effort: Facial expression analysis using SVM + gabor features: study, algorithm understanding, implementation, database annotation and testing.
- An Image Based Rendering system, with image matting performed at object edges, automatically guided by depth map.
- A statistical algorithm to fill cracks in rendered output.
- MRF based stereo depth estimation, based on belief propagation.
- Selected to visit the conferences CVPR 2010, ICVGIP 2010 and FG 2011 for helping research road map of company.

MatrixView Technologies (India) Pvt Ltd, Chennai   May 2007 – May 2008
Algorithm Research Engineer, image processing for video compression (h.264).
- Implemented a Gaussian pre-filter, leading to perceptually lossless compression.
- Applied Structural Similarity Index (SSIM) with-in rate-distortion optimization of I Frames,
- leading to further compression.

Robotics Laboratory, Clemson University, SC, USA   August 2003 – January 2007
Graduate Research Assistant, vision and control for robotics.
- *Thesis: Advanced control techniques for robotic manipulators.*

Adaptive Control of a Redundant Robot. Visual Servo of a planar robot by numerical optimization. Visual Servo of a Trunk shaped robot.
- Further work in control:
  Robust control (H2, H∞, μ synthesis). Project: insulin pump control system.
  Stochastic estimation: Kalman filters, Particle filter.
- Other works with camera in the loop:
  Approach: KLT feature tracking; geometric information obtained by homography decomposition; design of controllers/estimators based on Lyapunov theory.
  - o Vision based control for leader/follower tracking: Mobile robots and UAVs.
  - o Structure from Motion Estimation.
  - o Camera calibration.
  - o Other image and video work:
  - o Exposed to Graph Cuts for inference in MRFs.
  - o Active Shape Models, Canny edge detection, Simulation of CT imaging.
  - o Courses: Linear Systems, Nonlinear Control, Robust Control, Robot Dynamics, Robot Motion Planning, Introduction to Stochastic Estimation, Image Processing.

Sieflex Robotics Company, Chennai.   August 2002 – July 2003
Automation Engineer, industrial robotics projects.

- Designed and assembled robot work cells.

COMPUTING SKILLS
Very Good: C; C++, Matlab; Familiar: Python.
Libraries: OpenCV, STL. OS: Windows, Linux.

HONOURS
    1. Merit Scholarship: National Talent Search Examination (NTSE) (1995).
    2. IIT JEE All India Rank – 155 among more than 100,000 candidates (1997).
    3. Gold Medalist (25 selected out of ~15000 candidates) in National Standard Exam of the Indian Association of Physics Teachers (1997).
    4. 9th rank Physics Talent Test conducted by the Physics Society of Madras (1997).
    5. Award named "Value of Values" given by my school for my work ethic (1997).

SELECTED PUBLICATIONS AND PATENT APPLICATIONS
- **Primary contributor**: *Method and apparatus for estimating a pose of a head for a person,* US Patent App. 13/908,282, Pub Date: 3.6.2013.
- **Primary contributor**: *Method and system for rendering three dimensional views of a scene,* US Patent App. 13/144,442, Pub Date: 13.01.2011.
- **H. Kannan**, V. Chitrakaran, D. Dawson, T. Burg, *Vision-based Leader/Follower Tracking for Nonholonomic Mobile Robots*, American Control Conference, 2007.
- V. Chitrakaran, D. Dawson, **H. Kannan**, M. Feemster, *Vision Assisted Autonomous Path Following for Unmanned Aerial Vehicles*, IEEE Conference on Decision and Control, 2006.
- V. Chitrakaran, D. Dawson, J. Chen, **H. Kannan**, *Velocity and Structure Estimation of a Moving Object using a Moving Monocular Camera*, American Control Conference, 2006.

UNDERGRADUATE PROJECTS
- **Midas Communication Technologies Pvt Ltd, Chennai:** Interface between WLL and PSTN: DSP system design; CPLD programming; PCB design (Orcad Layout); SMPS assembly.
- **Ushamartin Academy, IIT-M:** Implemented phone call state machine in a toy exchange.

GOOGLE SCHOLAR PROFILE
http://scholar.google.co.in/citations?user=Cu8kq_gAAAAJ&hl=en&oi=ao