Siddharth Narayanaswamy

(323) 743-3239   siddharth@iffsid.com   `http://iffsid.com`

March 2, 2013

Skills

extensive computer-vision, signals and systems, and robotics background, strong experience with machine learning, statistics, visual perception, cognitive science, knowledge representation, algorithms and compiler design, haptics, automatic-differentiation, stochastic and non-deterministic programming languages, functional, logic, and constraint programming.

Languages

Scheme, Haskell, Lisp, C/C++, MATLAB, Python, Prolog, Java, VHDL, Verilog, DSP(AD Blackfin) assembly, microcontroller assembly, x86 assembly

native English, Tamil, and Hindi

Experience

PhD student, Artificial Intelligence

2008 − present

Jeffrey Mark Siskind

Purdue University

- designed and built custom robots for general manipulation tasks
- solved vision and robotic manipulation problems using AD-based optimization
- implemented closed-loop visual-servoing mechanism to drive motor control
- developed and implemented stochastic programs to use language & vision, and reasoning about rules jointly, to solve for perception
- developed novel and robust tracking, segmentation, and action recognition methods as part of the DARPA Mind's Eye program
- nondeterministic programming for solving constraint-satisfaction problems
- stochastic modeling via probabilistic programming
- TA for ECE473 & ECE570, Artificial Intelligence
- `http://iffsid.com/research.html`

Undergraduate Research Project

May 2007 − Aug. 2008

Guided by Professor Muniyandi Manivannan

IIT-Madras

- implemented a DIY Part-Task Laparoscopic Simulator
- optimized vision algorithms to run on low-cost uncalibrated components
- tested against industry-standard equipment to demonstrate reasonably low error margins
- worked on a haptic-vision developmental interface
- collaborated with practicing doctors to test feasibility

Part-Time Instructor

Oct. 2007 − Aug. 2008

The Princeton Review(Manya Education Pvt.Ltd.)

Chennai, India

- for the GRE and GMAT standardized exams
- tutored around 250 students

Undergraduate Research Intern

May 2007 − Sept. 2007

Doors and Gates Pvt.Ltd.

Chennai, India

- implemented a range of IR control mechanisms for controller operations
- tested and used implemented mechanisms successfully in robots during competitions
- designed hybrid control mechanism for non-line-of-sight applications that included switching between multiple modes of operation autonomously

Education

Phd Student, Artificial Intelligence
2008 – present
Purdue University

Artificial Intelligence, Computer Vision, Natural Language Processing
Machine Learning, Robotics

Bachelor of Engineering - Electronics and Communication
2004 – 2008
Anna University, India

Image Processing, Speech Processing, Computer Vision
Communication Systems, Embedded Systems (Robotics)

Publications / Posters

Recognizing Human Activities from Partially Observed Videos
Jun 2013
Poster

Y. Cao, D. Barrett, A. Barbu, N. Siddharth, H. Yu, A. Michaux, Y. Lin, S. Dickinson, J. Siskind, S. Wang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

Seeing Unseeability to See the Unseeable
Oct 2012
Paper/Journal

N. Siddharth, A. Barbu, and J. M. Siskind
Advances in Cognitive Systems(ACS)

Simultaneous Object Detection, Tracking, and Event Recognition
Oct 2012
Paper/Journal

A. Barbu, N. Siddharth, A. Michaux, and J. M. Siskind
Advances in Cognitive Systems(ACS)

Video In Sentences Out
Aug 2012
Paper/Conference

A. Barbu, A. Bridge, Z. Burchill, D. Coroian and S. Dickinson , S. Fidler, A. Michaux, S. Mussman and N. Siddharth , D. Salvi, L. Schmidt, J. Shangguan and J. M. Siskind, J. Waggoner, S. Wang, J. Wei and Y. Yin and Z. Zhang
Proceedings of the Twenty-Eighth Conf. on Uncertainity in Artificial Intelligence(UAI)

A Visual Language Model for Estimating Object Pose and Structure in a Generative Visual Domain
May 2011
Paper/Conference

N Siddharth, A. Barbu, and J. M. Siskind
Proceedings of 2011 IEEE International Conf. on Robotics and Automation(ICRA)

Learning Physically-Instantiated Game Play Through Visual Observation
May 2010
Paper/Conference

A. Barbu, N Siddharth, and J. M. Siskind
Proceedings of 2010 IEEE International Conf. on Robotics and Automation(ICRA)

Design of a Do-It-Yourself VR Based Laparoscopic Simulator
Jan. 2009
Poster

N.Siddharth, M.Manivannan, Suresh Devasahayam, and George Mathew
Medicine Meets Virtual Reality (MMVR17)