Nitin J. Sanket

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RESEARCH INTERESTS

3D Reconstruction aided by Deep Learning for Navigation of Robots

EDUCATION

University of Maryland, College Park   Expected May 2019
  Doctor of Philosophy in Computer Science | CGPA – 3.91/4
University of Pennsylvania   May 2016
  Master of Science in Engineering in Robotics | CGPA – 3.96/4
M. S. Ramaiah Institute of Technology (MSRIT)   May 2013
  Bachelor of Engineering in Electronics and Communication | CGPA – 9.68/10

PROFESSIONAL AND RESEARCH EXPERIENCE

Research Assistant   May 2017 to Current
  Working on Active Vision based on Deep Learning for Perception aware planning and mapping,
  Advisors: Prof. Yiannis Aloimonos and Dr. Cornelia Fermüller.
Guest Lecturer   May 2017 to Current
  Co taught "Vision, Planning and Control in Aerial Robotics" course with *Prof. Yiannis Aloimonos.*
Reviewer   May 2016 to Current
  Currently reviewing for Elsevier's Computer Vision and Image Understanding journal, International Conference on Computer Vision, International conference on Robotics and Automation, Elsevier's Image and Vision Computing journal, International conference on Computer Vision and Pattern Recognition and Robotics: Science and Systems.
Teaching Assistant   Aug 2016 to May 2017
  Courses: Image Processing, Computer Processing of Pictorial Information with *Prof. Yiannis Aloimonos.*
Research Assistant   Jan 2015 to May 2016
  GRASP Laboratory, University of Pennsylvania, *Advisor: Prof. Kostas Daniilidis.*
  Worked on generating ground-truth trajectories for Visual Inertial Odometry (Master's Thesis).
  Worked on Object Segmentation from store shelf images using contextual information.
Project Assistant at Indian Institute of Science   Sept 2013 to Dec 2013
  Video Analytics Laboratory, SERC, *Advisor: Prof. R. Venkatesh Babu.*
Research Assistant at MSRIT   Jan 2012 to June 2013
  Worked on Face Recognition and Localization, *Advisor: Prof. K. Manikantan.*

KEY SOFTWARE SKILLS

Programming Languages: MATLAB-Simulink, Python, Bash, C.
Developer Platforms and Softwares: Arduino, Processing, Atmel Studio, Code Composer Studio, Keil, Visual Studio, Eclipse, LaTeX, MS Office Kit, P-Spice, NI Multisim, Adobe Flash, Photoshop, CorelDRAW.

COURSE PROJECTS: GRADUATE

Depth from Single Image: Obtaining depth from a single image using supervised deep learning.   Fall 2017
Structure from Motion: Building structure of a scene from multiple images.   Spring 2017
Object Recognition: Recognizing ImageNet classes using Deep learning.   Fall 2016
PUMA Portrait Artist: Programmed a PUMA 260 robotic arm to perform light painting of any face on the camera using Inverse Kinematics.   Fall 2014
Sensable Haptic Interface: Programmed a Premium Phantom interface to simulate virtual objects like sphere, box and liquid in space.   Fall 2014
Robockey: Designed the circuitry and lower level hardware based code for Hockey Playing Robots.   Fall 2014
Acrobat: Designed the circuitry and tuned the PID loop for a two wheeled inverse pendulum robot.   Fall 2014
Face Morph: Developed and Implemented algorithms for Automatic Face Detection using Particle Swarm Optimization and Face Replacement with morphing and blending. Also implemented algorithms for Automatic Image Mosaicing and Panorama Stitching.   Fall 2014

MAJOR RESEARCH PROJECTS: UNDERGRADUATE

Cognitive Humanoid Autonomous Modular Platform: A 3 foot tall low cost humanoid platform developed to aid deployment of computer vision and robotics algorithms for school kids. <u>Contributions</u>: Design of hardware and mechanical structure, development of face and object recognition engine.   May 2013 to Jan 2014
Cognitive Learning Assisted Robotic Arm: A robotic arm which can mimic the intelligence of a 1 year old baby with voice recognition and object recognition. <u>Contributions</u>: Design of cognition engine and hardware. <u>Recognitions</u>: Best Project Award at MSRIT and Second place in the IEEE R10 Demo!T Paper and Prototype Competition. July 2012 to April 2013
Moksha Unmanned Ground Vehicle: Designed and developed a UGV capable of autonomously navigating in an obstacle course. <u>Contributions</u>: Development of Electrical Power Systems, Obstacle Avoidance and Lane Detection

algorithms. Represented India in IGVC 2012, recognized as most cost efficient design in the competition. July 2011 to May 2012

Refereed Conference Publications

Bernd Pfrommer, **Nitin J. Sanket**, Kostas Daniilidis, Jonas Cleveland "PennCOSYVIO: A challenging Visual Inertial Odometry benchmark", *IEEE International Conference on Robotics and Automation*, (2017) 3847–3854.

Nitin J. Sanket, Vyshak A. V., K. Manikantan, S. Ramachandran "Face Recognition using Adaptive Filter Wavelet Transform based Feature Extraction", *IEEE International Conference on Science, Engineering and Management Research*, (2014) 1–9.

Nitin J. Sanket, K. Manikantan, S. Ramachandran "Recursive Binary Particle Swarm Optimization based Face Localization", *IEEE National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics*, (2013).

B. Chandan, Chetan Sadhu, Madan Ravi Ganesh, **Nitin J. Sanket**,"Novel Approach to Lane and Path Detection in Unmanned Ground Vehicles", *IEEE International Conference on Advances in Technology and Engineering*, (2013) 1–6.

Refereed Journal Publications

Nitin J. Sanket[*], Chahat Deep Singh[*], Yuxin Ma, Kanishka Ganguly, Cornelia Fermüller, Yiannis Aloimonos "GapFlyt: Active Vision Based Structure-less Gap Detection For Quadrotor Flight Using Deep Learning", *IEEE Robotics and Automation Letters*, (2017) (Under Review).

References

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I declare that the information given above is true to the best of my knowledge.