

# SURYANSH KUMAR

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## EDUCATION

- The Australian National University**, Canberra. PhD in Computer Science, Sept 2015- Present.  
Computer Vision and Robotics Group.  
**Supervisors:** Prof. Richard Hartley, Dr. Yuchao Dai.  
**Chair of Panel:** Prof. Hongdong Li.
- International Institute of Information Technology**, Hyderabad. M.S in Computer Science and Engineering, August 2013.  
Robotics Research Centre.  
GPA: 8.71 on 10.0 scale.

## RESEARCH INTERESTS

- Computer Vision:** 3D Reconstruction, Non-Rigid Structure from Motion, Multiple View Geometry.
- Robot Vision:** Visual SLAM, Mobile Object Tracking & Segmentation.
- Statistical Learning:** Convex Optimization and Probabilistic Graphical Models.

## PROFESSIONAL EXPERIENCE

- Certification on Machine Learning offered by Stanford University on Coursera.** License Number: FBXH2KPEU44M, 26<sup>th</sup> Nov. 2015.  
Course Instructor: Prof. Andrew Ng.
- Uurmi Systems Pvt. Limited, Hyderabad.** Image Understanding Group, Consultant Engineer, July 2014 – June 2015.  
**Projects**
  - Structure from Motion for rigid objects using Monocular Camera. Project Members: Laxit G, Bhavana G, Shanti S.
  - System for visual moving object segmentation, track archival and replay for UAV Videos. Project Members: Venkatesh B.S, Abhishek T, Shanti S.

## RESEARCH EXPERIENCE

- Institut national de recherche en informatique et en automatique (INRIA)** Rhône-Alpes Grenoble, Research Intern, Sept 2013-Feb 2014.  
**Supervisors:** Dr. Dizan Vasquez, Prof. Christian Laugier.
- International Institute of Information Technology (IIIT-H)** Hyderabad, Research Assistant, July 2011- August 2013.  
**Supervisor:** Prof. K. Madhava Krishna.
- Indian Institute of Technology (IIT-H)** Hyderabad, Project Associate, July 2010-Dec. 2010.  
**Supervisor:** Dr. P. Rajalakshmi.

## AWARDS & ACHIEVEMENTS

- Recipient of "The Australian National University Higher Degree Research" Merit Scholarship Award.
- Recipient of "Best Innovative Group 2014", by Uurmi Systems Private Limited, India.
- Full-Time Funded Student by "Campus France", for research internship at INRIA, Grenoble-France.
- Full-Time Scholarship Student for MS program in IIIT-Hyderabad, India.
- Winner of "8085 Programming contest" and "Project Demonstration contest" organized at TITIKSHA 2008, SMVDU, J&K India.

## PUBLICATIONS

- Suryansh Kumar, Siva Karthik M, K. Madhava Krishna, "Markov Random Field based Small Obstacle discovery over Images", International Conference on Robotics and Automation (ICRA), IEEE, 2014, Hong Kong, China.
- Dizan Vasquez, Yufeng Yu, Suryansh Kumar, Christian Laugier, "An open framework for human like autonomous driving using Inverse Reinforcement Learning", Vehicle Power and Propulsion Conference (VPPC), IEEE, 2014, Coimbra, Portugal (Oral).
- Sarthak Upadhaya, Suryansh Kumar, K. Madhava Krishna, "CRF based Frontier Detection using Monocular Camera", Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), ACM, 2014, IISc Bangalore, India (Oral).
- Sudhanshu Mittal, Siva Karthik M, Suryansh Kumar, K. Madhava Krishna. "Small Obstacle Discovery and Recognition using Actively Guided Robots", International Conference on Pattern Recognition (ICPR), IEEE, 2014, Stockholm, Sweden.
- Suryansh Kumar, Ayush Dewan, K. Madhava Krishna, "A Bayes filter based adaptive floor segmentation with homography and appearance cues", Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) ACM, 2012, IIT-Bombay, India (Oral).
- Kotwal, S. B., Verma S., Suryansh, Sharma, A, "Region Based Collaborative Angle of Arrival Localization for Wireless Sensor Networks with Maximum Range Information", International Conference on Computational Intelligence and Communication Networks (CICN), 2010. IEEE, Bhopal, India.

## SELECTED PROJECTS

- Non-Rigid Structure from Motion.**  
**Research Lab:** Computer Vision and Robotics Lab, The Australian National University.  
**Project Advisor:** Dr. Yuchao Dai, Prof. Hongdong Li.
- Structure from Motion for Rigid Objects using Monocular Camera. (Industrial Project)**  
**Research Lab:** Image Understanding Group, Uurmi Systems.  
**Project Advisor:** Laxit G., Dr. Shanti Swarup M.
- System for visual moving object segmentation, track archival and replay for UAV Video's. (Industrial Project)**  
**Research Lab:** Image Understanding Group, Uurmi Systems.  
**Project Advisor:** Dr. B.S Venkatesh, Dr. Abhishek T, Dr. Shanti Swarup M.
- Fusing Appearance and Geometric Cues for Adaptive Floor Segmentation over Images. (Lab. Project)**  
**Research Lab:** Robotics Research Centre, IIIT-H  
**Project Advisor:** Prof. K Madhava Krishna.

- [Image Search Engine. \(Course Project\)](#)  
**Research Lab:** Centre for Visual Information Technology (CVIT), IIIT-H  
**Project Advisor:** Prof. C.V Jawahar, Prof. P.J Narayanan.
- [Virtual Lab for Mobile Robotics. \(MHRD India Project\)](#)  
**Financed by:** The Ministry of Human Resources and Development, India.  
**Project Advisor:** Prof. K. Madhava Krishna.

#### STUDENTS & INTERN SUPERVISED

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- Siva Karthik M. ECE Dual Degree Student, Robotics Research Centre, IIIT-H.
- Sarthak Upadhaya. CSE, MS Student, Robotics Research Centre, IIIT-H.
- Bhavana G. Internship Student, Image Understanding Group, Uurmi Systems, Hyderabad.

#### PROGRAMMING & COMPUTING SKILLS

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- **Programming Languages:** C, C++, Python, Java and Assembly.
- **Scripting Languages:** Matlab/Octave, Unix Shell Programming.
- **Libraries & APIs:** OpenCV, CERES, CVX, OpenGL, ROS, Eigen, STL (C++, Java), Qt, libsvm.
- **Systems & Tools:** Linux (Ubuntu, Fedora, Red-Hat), Dia, LATEX.

#### HOBBIES & OTHER SOCIAL ACTIVITIES

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- **Volunteer Work:** Taught Mathematics to Secondary and Higher Secondary School Students, in H. Kharagpur, Munger, Bihar(A village in the north-eastern part of India).
- **Hobbies:** Singing, Photography, Travelling and Cooking.
- **Languages:** English, Hindi, Magahi & Telugu(fair, so-so).