



## SURYANSH KUMAR

B332, Brain Anderson Building,  
CECS, ANU, ACT 2601, Canberra.  
<https://suryanshkumar.github.io>



### EDUCATION

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- [THE AUSTRALIAN NATIONAL UNIVERSITY.](#) Sept. 2015 - Till date.  
Ph.D. in Engineering and Computer Science.  
Research Area: Computer Vision.  
Supervisory Panel: Yuchao Dai, Hongdong Li, Richard Hartley.
- [IIIT-HYDERABAD.](#) July 2011 - July 2013.  
M.S. in Computer Science and Engineering.  
Research Area: Robot Vision.  
Supervisor: K Madhava Krishna.

### AWARDS AND ACHIEVEMENTS

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- Awarded ANU Vice-Chancellor Grant.
- **Winner** of NRSfM Challenge at CVPR 2017, Prize awarded by Disney Research.
- Student funding to attend ICML 2017, Sydney Australia and ICCV 2017, Venice Italy.
- Student funding to attend Robot Vision Summer School 2016, Kiola, Australia.
- Recipient of “Australian National University Higher Degree Research” Merit Scholarship Award.
- Recipient of “Best Innovative Group 2014”, by Uurmi Systems Private Limited, India.
- Fully funded by Campus France to do research at INRIA, Grenoble-France.
- Full-Time Scholarship Student for MS program at IIIT-Hyderabad, India.
- Winner of “8085 Programming” and “Project Demonstration” contest at TITIKSHA 2008.

### PUBLICATIONS

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- [1] Suryansh Kumar, Yuchao Dai, Hongdong Li.  
[Superpixel Soup: Monocular Dense 3D Reconstruction of a Complex Dynamic Scene.](#)  
Transactions on Pattern and Machine Intelligence, 2018 (**T-PAMI**), IEEE, (Under Review).
- [2] Suryansh Kumar, Anoop Cherian, Yuchao Dai, Hongdong Li.  
[Scalable Dense Non-rigid Structure from Motion: A Grassmannian Perspective.](#)  
Conference on Computer Vision and Pattern Recognition (**CVPR**), IEEE, 2018, Utah, USA.
- [3] Suryansh Kumar, Yuchao Dai, Hongdong Li.  
[Monocular Dense 3D Reconstruction of a Complex Dynamic Scene from Two Perspective Images.](#)  
International Conference on Computer Vision (**ICCV**), IEEE, 2017, Venice, Italy.
- [4] Suryansh Kumar, Yuchao Dai, Hongdong Li.  
[Spatio-Temporal Union of Subspaces for Multi-body Non-rigid Structure-from-Motion.](#)  
Pattern Recognition Journal (**PR**), Elsevier, 2017.  
(**Received Best Algorithm Award in NRSFM Challenge at CVPR 2017**)
- [5] Suryansh Kumar, Yuchao Dai, Hongdong Li.  
[Multi-body Non-rigid Structure from Motion.](#)  
International Conference on 3D Vision (**3DV**), IEEE, 2016, Stanford University, USA.
- [6] 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.
- [7] Suryansh Kumar, Ayush Dewan, K. Madhava Krishna.  
[A Bayes filter based adaptive floor segmentation with homography and appearance cues.](#)  
**ICVGIP**, ACM, 2012, IIT-B, India. (**Oral Presentation**)

## RESEARCH INTERESTS

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- **COMPUTER VISION:** Structure from Motion, Motion Segmentation, Optical Flow.
- **ROBOTICS:** SLAM, Visual SLAM.
- **MATHEMATICS:** Mathematical Optimisation, Compressed Sensing, Topological Manifolds.
- **OTHERS:** Discrete Differential Geometry, Deep Learning.

## PROFESSIONAL SERVICE

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- **REVIEWER:** 3DV 2017, ICRA 2018, CVPR 2018, 3DV 2018, IEEE C.I Magazine 2018.
- **TA, COMPUTER VISION COURSE.** (ENGN4528/6528) Feb. 2018 - July 2018.  
Course Instructor: Hongdong Li.
- **TA, INDIVIDUAL ENGINEERING PROJECT COURSE.** (ENGN4200) Feb. 2017 - July 2017.  
Course Instructor: Yuchao Dai.
- **TA, COMPUTER VISION COURSE.** (ENGN4528/6528) Feb. 2017 - July 2017.  
Course Instructor: Jonghyuk Kim.
- **CONSULTANT-ENGINEER, ALGORITHM DEVELOPER.** July 2014 - July 2015.  
Company: Uurmi Systems, Hyderabad, India.

## RESEARCH EXPERIENCE

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- **INRIA, e-MOTION, GRENOBLE-FRANCE.** Sept. 2013 - Feb. 2014.  
Visiting Scientist.  
Topic: Autonomous Driving  
Advisors: Dizan Vasquez, Christian Laugier.
- **IIIT-HYDERABAD, INDIA.** Jan. 2011 - Aug. 2013.  
Research Assistant.  
Topic: Robot Vision  
Supervisor: K Madhava Krishna.
- **IIT-HYDERABAD, INDIA.** Aug. 2010 - Dec. 2010.  
Project Associate.  
Topic: Pervasive Sensor Networks  
Supervisor: P. Rajalakshmi.

## TECHNICAL SKILL SET

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- **Programming Language:** C/C++ (5+years of experience), Python, Java and Assembly.
- **Scripting Language:** Matlab, Octave, Unix Shell Programming.
- **Libraries and APIs:** OpenCV, OpenGL, ROS, Eigen, STL(C++, Java), Pangolin.
- **Deep Neural Network Frameworks:** PyTorch, TensorFlow.
- **Web and Documentation:** HTML, CSS, L<sup>A</sup>T<sub>E</sub>X.
- **Others:** Embedded C, Unix System Programming.

## LANGUAGES

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English, Hindi, Magahi.

References are available on request