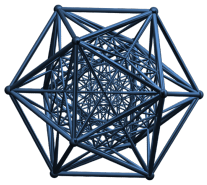

Suryansh Kumar

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CECS, ANU, ACT 2601, Canberra.
https://suryanshkumar.github.io

Education

- Australian National University. September 2015 - To date.
  Ph.D. in Engineering and Computer Science.
  Research Area: Computer Vision.
  Supervisory Panel: Yuchao Dai, Hongdong Li, Richard Hartley.

- IIIT-Hyderabad. July 2013.
  M.S. in Computer Science and Engineering.
  Research Area: Machine Vision.
  Supervisor: K Madhava Krishna.

Awards and Achievements

- 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

[1] Suryansh Kumar
Non-rigid Structure from Motion: Prior-Free Factorization Method Revisited.
ArXiv Preprint 2019. (Under Review)

[2] Suryansh Kumar, Ram Srivatsav Ghorakavi, Yuchao Dai, Hongdong Li.
Dense Depth Estimation in Complex Dynamic Scene without Explicit 3D Motion Estimation.
ArXiv Preprint 2019. (Under Review)

[3] Suryansh Kumar, Yuchao Dai, Hongdong Li.
Superpixel Soup: Monocular Dense 3D Reconstruction of a Complex Dynamic Scene.
Transactions on Pattern and Machine Intelligence, 2019 (**T-PAMI**), IEEE (Under Review).

[4] Suryansh Kumar
Jumping Manifolds: Geometry Aware Dense Non-Rigid Structure from Motion.
Conference on Computer Vision and Pattern Recognition, (**CVPR**), IEEE, 2019, CA, USA.

[5] 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.

[6] 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.

[7] 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 by Disney Research.

[8] Suryansh Kumar, Yuchao Dai, Hongdong Li.
Multi-body Non-rigid Structure from Motion.
International Conference on 3D Vision (**3DV**), IEEE, 2016, Stanford University, USA.

[9] 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.

[10] Suryansh Kumar, Ayush Dewan, K. Madhava Krishna.
A Bayes filter based adaptive floor segmentation with homography and appearance cues.
(**ICVGIP**), ACM, 2012, IIT-Bombay, India. (**Oral Presentation**)

[11] Sarthak Upadhyay, Suryansh Kumar, K. Madhava Krishna.
CRF Based Frontier Detection using Monocular Camera.
(**ICVGIP**), ACM, 2014, IISc Bangalore, India. (**Oral Presentation**)

[12] Sudhanshu Mittal, Siva Karthik M, Suryansh Kumar, K. Madhava Krishna.
Small object discovery and recognition using actively guided robot.
International Conference on Pattern Recognition (**ICPR**), IEEE, 2014, Stockholm, Sweden.

Research Interests

- Computer Vision: 3D Reconstruction, Depth Estimation and Motion Segmentation.
- Machine Vision: Camera Calibration, SLAM and Visual SLAM.
- Mathematics: Mathematical Optimisation, Compressed Sensing, Topological Manifolds.
- Machine Learning: Deep Learning, Support Vector Machine, Probabilistic Graphical Models.
- Others: Discrete Differential Geometry.

Professional Service

- Program Committee Member: ACM Multimedia 2019.
- Reviewer: T-PAMI, CVPR, ICCV, ICRA, 3DV, IEEE C.I Magazine.
- 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

- 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.

Online Course Certification

- Machine Learning
  Coursera, License No: FBXH2KPEU44M, Course Instructor: Andrew Ng.
- Neural Networks and Deep Learning
  Coursera, License No: UJWL63E4KPB2, Course Instructor: Andrew Ng.
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
  Coursera, License No: PDVY9DCXEA7H, Course Instructor: Andrew Ng.

Technical Skill Set

- Programming Language: C/C++, Python.
- Scripting Language: Matlab, Octave, Unix Shell Programming.
- Libraries and APIs: OpenCV, OpenGL, ROS, Eigen, STL, Numpy, Scipy, Pangolin.
- Deep Neural Network Frameworks: PyTorch, TensorFlow.
- Web and Documentation: HTML, CSS, LaTeX.
- Others: Embedded C, Unix System Programming.

Languages

English, Hindi.

References are available on request