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EDUCATION

- 2003 – 2009 **University of California, San Diego**
Ph.D. in Computer Science
Thesis: *From Pictures to 3D: Global Optimization for Scene Reconstruction*
- 1999 – 2003 **Indian Institute of Technology, Bombay**
B.Tech. in Electrical Engineering

WORK EXPERIENCE

- | | | |
|----------------|-------------------------------------|----------------------|
| 2016 – Present | University of California, San Diego | Assistant Professor |
| 2015 – 2016 | NEC Labs America | Department Head |
| 2014 – 2015 | NEC Labs America | Senior Researcher |
| 2011 – 2014 | NEC Labs America | Researcher |
| 2009 – 2011 | University of California, Berkeley | Postdoctoral Scholar |

HONORS

- 2018 NSF CAREER Award
- 2016 Outstanding Reviewer Award at ECCV
- 2014 IEEE Computer Society **Best Paper Award** at CVPR
- 2011 IEEE PAMI **Special Issue on Best Papers** of CVPR 2011
- 2010 UCSD nominee for ACM Doctoral Dissertation Award
- 2009 IEEE Computer Society Outstanding Reviewer Award at ICCV
- 2009 CSE Dissertation Award for **Best Thesis** at UCSD
- 2007 Marr Prize **Honorable Mention for Best Paper** at ICCV

PUBLICATIONS

Journal Articles ^{††}

1. C. Li, Z. Zia, Q.-H. Tran, X. Yu, G. Hager and **M. Chandraker**. *Deep Supervision with Intermediate Concepts*. IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI. [to appear]
2. T.-C. Wang, **M. Chandraker**, A. Efros and R. Ramamoorthi. *SVBRDF-Invariant Shape and Reflectance Recovery from Light Fields*. IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI 40(3):740-754, March 2018.
3. **M. Chandraker**. *The Information Available to a Moving Observer on Shape Recovery with Unknown Isotropic BRDF*. IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI 38(7):1283-1297, July 2016. [**Special Issue, Best Papers of CVPR 2014**]
4. **M. Chandraker**, J. Bai and R. Ramamoorthi. *On Differential Photometric Reconstruction with Unknown, Isotropic BRDFs*. IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI 35(12):2941-2955, December 2013 [**Special Issue, Best Papers of CVPR 2011**].
5. **M. Chandraker**, J. Bai, T.-T Ng and R. Ramamoorthi. *On the Duality of Forward and Inverse Light Transport*. IEEE Transactions on Pattern Analysis and Machine Intelligence, PAMI 33(10):2122-2128, October 2011.

^{††}IEEE PAMI and IJCV have among the highest ISI impact factors across all computer science categories.

6. **M. Chandraker**, S. Agarwal, D.J. Kriegman and S. Belongie. *Globally Optimal Algorithms for Stratified Autocalibration*. International Journal of Computer Vision, IJCV 90(2):236-254, November 2010. [Special Issue, Best Papers of ICCV 2007]
7. F. Kahl, S. Agarwal, **M. Chandraker**, D.J. Kriegman and S. Belongie. *Practical Global Optimization for Multiview Geometry*. International Journal of Computer Vision, IJCV 79(3):271-284, September 2008.

Refereed Conferences

8. Z. Li, Z. Xu, R. Ramamoorthi, K. Sunkavalli and **M. Chandraker**. *Learning to Reconstruct Shape and Spatially-Varying Reflectance from a Single Image*. ACM SIGGRAPH Asia 2018. [to appear]
9. Z. Li, K. Sunkavalli and **M. Chandraker**. *Materials for Masses: SVBRDF Acquisition with a Single Mobile Phone Image*. European Conference on Computer Vision, ECCV 2018. [oral presentation]
10. S. Schuster, M. Zhai, N. Jacobs and **M. Chandraker**. *Learning to Look around Objects for Top-View Representations of Outdoor Scenes*. European Conference on Computer Vision, ECCV 2018.
11. M. Fathy, Q.-H. Tran, Z. Zia, P. Vernaza and **M. Chandraker**. *Hierarchical Metric Learning and Matching for 2D and 3D Geometric Correspondences*. European Conference on Computer Vision, ECCV 2018.
12. Y.-H. Tsai, W.-C. Hung, S. Schuster, K. Sohn, M.-H. Yang and **M. Chandraker**. *Learning to Adapt Structured Output Space for Semantic Segmentation*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2018.
13. Z. Li, Z. Murez, D. Kriegman, R. Ramamoorthi and **M. Chandraker**. *Learning to See through Turbulent Water*. IEEE Winter Conference on Applications of Computer Vision, WACV 2018.
14. G. Chen, W. Choi, X. Yu, T. Han and **M. Chandraker**. *Learning Efficient Object Detection Models with Knowledge Distillation*. Neural Information Processing Systems, NIPS 2017.
15. K. Sohn, S. Liu, G. Zhong, X. Yu, M.-H. Yang and **M. Chandraker**. *Unsupervised Domain Adaptation for Face Recognition in Unlabeled Videos*. IEEE International Conference on Computer Vision, ICCV 2017.
16. X. Yin, X. Yu, K. Sohn, X. Liu and **M. Chandraker**. *Towards Large-Pose Face Frontalization*. IEEE International Conference on Computer Vision, ICCV 2017.
17. X. Peng, X. Yu, K. Sohn, D. Metaxas and **M. Chandraker**. *Feature Reconstruction-Based Disentanglement for Pose-Invariant Face Recognition*. IEEE International Conference on Computer Vision, ICCV 2017.
18. J. Gwak, C. Choy, A. Garg, **M. Chandraker** and S. Savarese. *Weakly Supervised 3D Reconstruction with Adversarial Constraint*. International Conference on 3D Vision, 3DV 2017.
19. Z. Li, Z. Xu, R. Ramamoorthi and **M. Chandraker**. *Robust Energy Minimization for BRDF-Invariant Shape from Light Fields*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2017.
20. C. Li, Z. Zia, Q.-H. Tran, X. Yu, G. Hager and **M. Chandraker**. *Deep Supervision with Shape Concepts for Occlusion-Aware 3D Object Parsing*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2017.
21. N. Lee, W. Choi, P. Vernaza, C. Choy, P. Torr and **M. Chandraker**. *DESIRE: Distant Future Prediction in Dynamic Scenes with Multiple Interacting Agents*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2017.
22. S. Schuster, P. Vernaza, W. Choi and **M. Chandraker**. *Deep Network Flow for Multi-Object Tracking*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2017.

^{##}ICCV, CVPR and ECCV are premier conferences in computer vision. Overall acceptance rates are about 20% and oral presentations have an acceptance rate of about 3–5%.

23. L. Zheng, H. Zhang, S. Sun, **M. Chandraker**, Y. Yang and Q. Tian. *Person Re-Identification in the Wild*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2017.
24. C. Choy, J. Gwak, S. Savarese and **M. Chandraker**. *Universal Correspondence Network*. Neural Information Processing Systems, NIPS 2016. [**oral presentation**]
25. X. Yu, F. Zhou and **M. Chandraker**. *Deep Deformation Network for Object Landmark Localization*. European Conference on Computer Vision, ECCV 2016. [*to appear*]
26. T.-C. Wang, E. Hiroaki, J. Zhu, **M. Chandraker**, A. Efros and R. Ramamoorthi. *A 4D Light-Field Dataset and CNN Architectures for Material Recognition*. European Conference on Computer Vision, ECCV 2016. [*to appear*]
27. A. Kanazawa, D. Jacobs and **M. Chandraker**. *WarpNet: Weakly Supervised Matching for Single-View Reconstruction*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016.
28. T.-C. Wang, **M. Chandraker**, A. Efros and R. Ramamoorthi. *SVBRDF-Invariant Shape and Reflectance Recovery from Light Fields*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016. [**oral presentation**]
29. V. Dhiman, Q.-H. Tran, J. Corso and **M. Chandraker**. *A Continuous Occlusion Model for Road Scene Understanding*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016.
30. C.-Y. Chen, W. Choi and **M. Chandraker**. *Atomic Scenes for Scalable Traffic Scene Recognition*. IEEE Winter Conference on Applications of Computer Vision, WACV 2016.
31. S. Song and **M. Chandraker**. *High Accuracy 3D Object Localization for Autonomous Driving Using SFM and Detection Cues*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2015. [**oral presentation**]
32. **M. Chandraker**. *On Joint Shape and Material Recovery from Motion Cues*. European Conference on Computer Vision, ECCV 2014.
33. **M. Chandraker**. *What Camera Motion Reveals About Shape with Unknown BRDF*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2014. [**oral presentation, 4% accepted**] [**Best Paper Award**] **
34. S. Song and **M. Chandraker**. *Robust Scale Estimation in Real-Time Monocular SFM for Autonomous Driving*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2014.
35. **M. Chandraker**, D. Reddy, Y. Wang and R. Ramamoorthi. *What Motion Reveals About Shape with Unknown BRDF and Lighting*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2013. [**oral presentation, 4% accepted**]
36. Y. Bao, **M. Chandraker**, Y. Lin and S. Savarese. *Dense Object Reconstruction with Semantic Priors*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2013. [**oral presentation, 4% accepted**]
37. S. Song and **M. Chandraker**. *Parallel, Real-Time Monocular Visual Odometry*. IEEE Conference on Robotics and Automation, ICRA 2013.
38. **M. Chandraker** and R. Ramamoorthi. *What an Image Reveals About Material Reflectance*. IEEE International Conference on Computer Vision, ICCV 2011. [**oral presentation, 3% accepted**]
39. **M. Chandraker**, J. Bai and R. Ramamoorthi. *A Theory of Differential Photometric Stereo for General Isotropic BRDFs*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2011. [**oral presentation, 3.5% accepted**]
40. J. Bai, **M. Chandraker**, T.-T. Ng and R. Ramamoorthi. *A Dual Theory of Inverse and Forward Light Transport*. European Conference on Computer Vision, ECCV 2010.

**IEEE CVPR is the highest rated publication venue for computer vision and seventh-highest across all engineering and computer sciences, according to Google Scholar metrics.

41. **M. Chandraker**, J. Lim and D.J. Kriegman. *Moving in Stereo: Efficient Structure and Motion Using Lines*. IEEE International Conference on Computer Vision, ICCV 2009.
42. **M. Chandraker** and D.J. Kriegman. *Globally Optimal Bilinear Programming for Computer Vision Applications*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2008. [oral presentation, 4% accepted]
43. **M. Chandraker**, S. Agarwal, D.J. Kriegman and S. Belongie. *Globally Optimal Affine and Metric Upgrades in Stratified Autocalibration*. IEEE International Conference on Computer Vision, ICCV 2007. [oral presentation, 4% accepted] [Marr Prize Honorable Mention for Best Paper]**
44. A. Agarwal, S. Izadi, **M. Chandraker** and A. Blake. *High Precision Multi-touch Sensing on Surfaces using Overhead Cameras*. IEEE Tabletop 2007.
45. **M. Chandraker**, S. Agarwal and D.J. Kriegman. *ShadowCuts: Photometric Stereo with Shadows*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2007.
46. **M. Chandraker**, S. Agarwal, F. Kahl, D. Nistér and D.J. Kriegman. *Autocalibration via Rank-Constrained Estimation of the Absolute Quadric*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2007.
47. S. Agarwal, **M. Chandraker**, F. Kahl, D.J. Kriegman and S. Belongie. *Practical Global Optimization for Multiview Geometry*. European Conference on Computer Vision, ECCV 2006. [oral presentation, 5% accepted]
48. **M. Chandraker**, F. Kahl and D.J. Kriegman. *Reflections on the Generalized Bas-Relief Ambiguity*. IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2005. [oral presentation, 5% accepted]
49. **M. Chandraker**, C. Stock and A. Pinz. *Real-Time Camera Pose in a Room*. International Conference on Computer Vision Systems, ICVS 2003.
50. C. Stock, U. Mùhlmann, **M. Chandraker** and A. Pinz. *Subpixel Corner Detection for Tracking Applications using CMOS Camera Technology*. Austrian Association of Pattern Recognition, AAPR 2002.

Refereed Book Chapters

51. **M. Chandraker**. *The Bas-Relief Ambiguity*. Computer Vision: A Reference Guide (edited by K. Ikeuchi), pages 43–46.

SELECTED PROFESSIONAL SERVICES

- Area Chair, AAAI Conference on Artificial Intelligence, AAAI 2019.
- Workshop Organizer, Autonomous Navigation in Unconstrained Environments, ECCV 2018. Area Chair, IEEE International Conference on Computer Vision, ICCV 2017.
- Tutorials Chair, International Conference on 3D Vision, 3DV 2016.
- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2016.
- Area Chair, Indian Conf. on Computer Vision, Graphics and Image Processing, 2014, 2016, 2018.

SELECTED RECENT TALKS

- Learning Geometry and Semantics for 3D Road Scene Understanding. Keynote, Workshop on Applications of Large-Scale Visual Odometry, CVPR 2018.
- Self-Driving: Past, Present and Future. IIIT Workshop on Autonomous Driving in India.
- Physical Models for Data-Driven Shape and Material. Keynote, Workshop on Physics-Based Deep Learning, ICCV 2017.
- Physically-Motivated CNNs for Material Estimation. Keynote, Workshop on Data-Driven BRDF Representations, ICCV 2017.
- Insights from Shape and Material for Learning to See in 3D. Keynote, Workshop on Learning to See from 3D Data, ICCV 2017.

**The Marr Prize is one of the top honors in computer vision, awarded once in two years to the best paper at ICCV.