Ming-Ming Cheng *Curriculum Vitae*

Basic Information (http://mmcheng.net/)

Ming-Ming Cheng is a professor with College of Computer and Control Engineering (CCCE), Nankai University. He received his PhD degree from Tsinghua University in 2012 under guidance of Prof. Shi-Min Hu, and working closely with Prof. Niloy Mitra from UCL. Then he did 2 years research fellow, working with Prof. Philip Torr in Oxford, UK. In 2014, he joint Nankai University as an associate Professor. He became a full professor since Dec. 2016.

Employment & Education

12/2016–now   Professor, Nankai University, Tianjin China.

9/2014–12/2016   Associate Professor, Nankai University, Tianjin China.

9/2012–9/2014   Research Fellow, work with Prof. Philip Torr at Torr Vision Group and University of Oxford, UK.

9/2007–7/2012   PhD, Dept. of Computer Science and Technology, Tsinghua University, China

9/2003-7/2007   B.S., Dept. of Computer Science and Technology, Xidian University, China. GPA: 90.6/100 (top 1%)

Research Interests

Computer graphics, computer vision, image retrieval, saliency detection, image segmentation, etc.

Publications & Patents

Representative Papers: (9000+ Google scholar citations)

D. P. Fan, **M.M. Cheng**, J. J. Liu, S. H. Gao, Q. Hou, and A. Borji. Salient objects in clutter: Bringing salient object detection to the foreground. In *ECCV*, 2018.

Y. Liu, P. T. Jiang, V. Petrosyan, S. J. Li, J. Bian, L. Zhang, and **M.M. Cheng**. DEL: Deep embedding learning for efficient image segmentation. In *IJCAI*, 2018.

K. Zhao, W. Shen, S. Gao, D. Li, and **M.M. Cheng**. Hi-Fi: Hierarchical feature integration for skeleton detection. In *IJCAI*, 2018.

D. P. Fan, C. Gong, Y. Cao, B. Ren, **M.M. Cheng**, and A. Borji. Enhanced-alignment measure for binary foreground map evaluation. In *IJCAI*, 2018.

Z. Shi, L. Zhang, Y. Liu, X. Cao, Y. Ye, **M.M. Cheng**, and G. Zheng. Crowd counting with deep negative correlation learning. In *IEEE CVPR*, pages 5382–5390, 2018.

W. Wang, J. Shen, F. Guo, **M.M. Cheng**, and A. Borji. Revisiting video saliency: A large-scale benchmark and a new model. In *IEEE CVPR*, 2018.

S. J. Li, B. Ren, Y. Liu, **M.M. Cheng**, D. Frost, and V. A. Prisacariu. Direct line guidance odometry. In *ICRA*, 2018.

J. X. Zhao, B. Ren, Q. Hou, and **M.M. Cheng**. Flic: Fast linear iterative clustering with active search. In *AAAI*, 2018.

J. Yang, J. Liang, K. Wang, Y.L. Yang, and **M.M. Cheng**. Automatic model selection in subspace clustering via triplet relationships. In *AAAI*, 2018.

J. Yang, Y. Sun, J. Liang, Y.L. Yang, and **M.M. Cheng**. Understanding image impressiveness inspired by instantaneous human perceptual cues. In *AAAI*, 2018.

W. Y. Lin, F. Wang, **M.M. Cheng**, S. K. Yeung, P. H. S. Torr, M. N. Do, and J. Lu. Code: Coherence based decision boundaries for feature correspondence. *IEEE TPAMI*, 40(1):34–47, 2018.

Z. Zhang, Y. Liu, X. Chen, Y. Zhu, **M.M. Cheng**, V. Saligrama, and P. H. S. Torr. Sequential optimization for efficient high-quality object proposal generation. *IEEE TPAMI*, 40(5):1209–1223, 2018.

D.-P. Fan, **M.M. Cheng**, Y. Liu, T. Li, and A. Borji. Structure-measure: A New Way to Evaluate Foreground Maps. In *IEEE ICCV (Sportlight)*, 2017.

J Bian, W.Y. Lin, Y. Matsushita, S.K. Yeung, T. D. Nguyen, and **M.M. Cheng**. Gms: Grid-based motion statistics for fast, ultra-robust feature correspondence. In *IEEE CVPR*, 2017.

Y. Wei, J. Feng, X. Liang, **M.M. Cheng**, Y. Zhao, and S. Yan. Object region mining with adversarial erasing: A simple classification to semantic segmentation approach. In *IEEE CVPR (Oral)*, 2017.

W.Y. Lin, F. Wang, **M.M. Cheng**, S.K. Yeung, P. Torr, M. Do, and J. Lu. CODE: Coherence based decision boundaries for feature correspondence. *IEEE TPAMI*, 2017.

Y. Liu, **M.M. Cheng**, X. Hu, K. Wang, and X. Bai. Richer convolutional features for edge detection. In *IEEE CVPR*, 2017.

M.M. Cheng, Q. Hou, S.H. Zhang, and P. L. Rosin. Intelligent visual media processing: When graphics meets vision. *JCST*, 2017.

Q. Hou, **M.M. Cheng**, X.W. Hu, A. Borji, Z. Tu, and P.H. Torr. Deeply supervised salient object detection with short connections. In *IEEE CVPR*, 2017.

X.C. Liu, **M.M. Cheng**, Y.K. Lai, and P.L. Rosin. Depth-aware neural style transfer. In *NPAR*, pages 4:1–4:10, 2017.

J. Wang, H. Jiang, Z. Yuan, **M.M. Cheng**, X. Hu, and N. Zheng. Salient object detection: A discriminative regional feature integration approach. *IJCV*, 123(2):251–268, 2017.

Y. Wei, X. Liang, Y. Chen, X. Shen, **M.M. Cheng**, Y. Zhao, and S. Yan. Stc: A simple to complex framework for weakly-supervised semantic segmentation. *IEEE TPAMI*, 39(11):2314–2320, 2017.

M.M. Cheng, Y. Liu, Q. Hou, J. Bian, P. Torr, S.M. Hu, and Z. Tu. Hfs: Hierarchical feature selection for efficient image segmentation. In *ECCV*, pages 867–882, 2016.

S. Hare, S. Golodetz, A. Saffari, V. Vineet, **M.M. Cheng**, S. Hicks, and P. Torr. Struck: Structured output tracking with kernels. *IEEE TPAMI*, 38(10):2096–2109, 2016.

M.M. Cheng, V.A Prisacariu, S. Zheng, P.H. S. Torr, and C. Rother. Densecut: Densely connected crfs for realtime grabcut. *Computer Graphics Forum*, 34(7), 2015.

A. Borji, **M.M. Cheng**, H. Jiang, and J. Li. Salient object detection: A benchmark. *IEEE TIP*, 24(12):5706–5722, 2015. (**Joint first author & corresponding author**.).

J. Valentin, V. Vineet, **M.M. Cheng**, D. Kim, S. Izadi, J. Shotton, P. Kohli, M. Niessner, A. Criminisi, and P. Torr. SemanticPaint: Interactive 3d labeling and learning at your fingertips. *ACM TOG*, 2015. (**Joint first author & corresponding author**.).

M.M. Cheng, N.J. Mitra, X. Huang, P.H.S. Torr, and S.M. Hu. Global contrast based salient region detection. *IEEE TPAMI*, 2014.

M.M. Cheng, S. Zheng, W.Y. Lin, V. Vineet, P. Sturgess, N. Crook, N.J. Mitra, and P.H.S. Torr. ImageSpirit: Verbal Guided Image Parsing. *ACM TOG*, 2014.

M.M. Cheng, Z. Zhang, and P.H.S. Torr. BING: Binarized normed gradients for objectness estimation at 300fps. In *IEEE CVPR (Oral, Accept rate = 5.57%)*, 2014.

S. Zheng, **M.M. Cheng**, J. Warrell, P. Sturgess, V. Vineet, C. Rother, and P.H.S. Torr. Dense semantic image segmentation with objects and attributes. In *IEEE CVPR*, 2014.

M.M. Cheng, N.J. Mitra, X. Huang, and S.M. Hu. SalientShape: Group saliency in image collections. *The Visual Computer*, 2014.

M.M. Cheng, J. Warrell, W.Y. Lin, S. Zheng, V. Vineet, and N. Crook. Efficient salient region detection with soft image abstraction. In *IEEE ICCV*, 2013.

W.Y. Lin, **M.M. Cheng**, S. Zheng, J. Lu, and N. Crook. Robust non-parametric data fitting for correspondence modeling. In *IEEE ICCV*, 2013.

S.M. Hu, T. Chen, K. Xu, **M.M. Cheng**, and R. R. Martin. Internet visual media processing: a survey with graphics and vision applications. *The Visual Computer*, pages 1–13, 2013.

T. Chen, P. Tan, L.Q. Ma, **M.M. Cheng**, A. Shamir, and S.M. Hu. PoseShop: Human image database construction and personalized content synthesis. *IEEE TVCG*, 2013.

M.M. Cheng. *Saliency and Similarity Detection for Image Scene Analysis*. PhD thesis, Tsinghua University, Beijing, China, 2012.

Y. Zheng, X. Chen, **M.M. Cheng**, K. Zhou, S.M. Hu, and N.J. Mitra. Interactive images: Cuboid-based scene understanding for smart manipulation. *ACM TOG (SIGGRAPH)*, 31(4), 2012.

F.L. Zhang, **M.M. Cheng**, J. Jia, and S.M. Hu. ImageAdmixture: Putting together dissimilar objects from groups. *IEEE TVCG*, 2012.

M.M. Cheng, G.X. Zhang, N.J. Mitra, X. Huang, and S.M. Hu. Global contrast based salient region detection. In *IEEE CVPR*, pages 409–416, 2011.

M.M. Cheng and G.X. Zhang. Connectedness of random walk segmentation. *IEEE TPAMI*, 33, 2011.

M.M. Cheng, F.L. Zhang, N.J. Mitra, X. Huang, and S.M. Hu. RepFinder: Finding approximately repeated scene elements for image editing. *ACM TOG (SIGGRAPH)*, 29(4):83:1–8, 2010.

T. Chen, **M.M. Cheng**, P. Tan, A. Shamir, and S.M. Hu. Sketch2Photo: Internet image montage. *ACM TOG*, 28(5):124:1–10, 2009.

G.X. Zhang, **M.M. Cheng**, S.M. Hu, and R.R. Martin. A shape-preserving approach to image resizing. *Computer Graphics Forum*, 28(7):1897–1906, 2009.

Notes: IEEE TPAMI is the #1 IEEE publication. **ACM TOG** is the most-cited ACM Transaction. **IEEE TPAMI**, **ACM TOG**, and **IEEE TVCG** are **A** class journals in the CCF recommendation list. **SIGGRAPH**, **CVPR**, and **ICCV** have CiteSeer impact factor ranking top 0.7%, top 5%, and top 5% of all computer science journals and conferences.

Patents: 10 Chinese patents granted and 3 International patents are published.

Major Honors & Awards

10/2016	ACM China Raising Star Award
8/2013	Outstanding Doctoral Dissertations Award from Beijing Municipal Government
6/2012	Beijing Municipal Government Award for "Outstanding PhD Graduates"
8/2011	IBM Ph.D. Fellowship
12/2010	Google PhD Fellowship
2010	Scholarship Award for Excellent Doctoral Student funded by Ministry of Education
6/2006	Microsoft Windows Embedded Student ChallengE, 3rd Place in the World Final Competition. ($4,000)

Highlighted Research Experience

Objectness estimation: This work presented a novel method for *objectness* estimation, which is usually represented as a value which reflects how likely an image window covers an object of *any category* image windows. We show on the standard PASCAL VOC benchmark that the proposed method is 1000× faster than competitive methods, while producing better results. The corresponding C++ source code got 500+ downloads in 2 days after its initial release! This paper has been published in **IEEE CVPR (Oral)** 2014.

Saliency detection: This work aims at the fundamental computer vision problem of salient object detection. Its accuracy (precision = 90%, recall = 90%) is much better than previous best results (precision = 75%, recall = 83%), when evaluated on the largest public available dataset. The source code has been request by and shared to more than 1000+ individuals for research or commercial usage. My saliency detection paper is currently the 2nd most cited paper in all 400+ IEEE CVPR 2011 papers, and its journal version published at **IEEE TPAMI** 2015.

Sketch2Photo: This work was selected as one of the *10 most innovative and promising worldwide initiatives of 2009* by the Netexplorateur jury, under the aegis of French government. The related introduction video in Vimeo has attracted 1,000,000+ clicks within 6 months. It also received the best research achievement award in China National Computer Conference 2010. The online commercial software also draws great user attention. I'm in charge of the retrieval algorithm (first half) of this work. The corresponding research paper was published in **ACM TOG** 2009.

Project experiences: I participated in several national (973, 863, NSFC, etc.) and international (EPSRC, etc.) research program.

Professional Activities

Program/Orgnization Co-Chair: VALSE 2016, CVM 2017, CCCV 2017

Publicity/Website Chair: ACCV 2016, CVPR 2019,

Media Coverage

My works have been reported by several famous international media, including BBC, Huffington Post, UK Telegraph, Spiegel, etc.

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