Shuai Zheng *Curriculum Vitae*

Summary (http://kylezheng.org/)

DPhil candidate working on Computer Vision and Machine Learning, with St Catherine's College & Department of Engineering Science, University of Oxford.

Email: shuai.zheng@eng.ox.ac.uk

Education

10/2013–10/2016(expected) DPhil student, University of Oxford, Oxford, United Kingdom
Topic: *Semantic Image Segmentation with Objects and Attributes*
Supervisor: Prof. Philip H.S. Torr

9/2008–7/2011 M.Eng, National Laboratory of Pattern Recognition, Chinese Academy of Sciences, Beijing, P.R.China
Thesis: *Mid-level feature representation learning for object recognition*.
Supervisors: Prof. Kaiqi Huang and Prof. Tieniu Tan

9/2004-6/2008 B.Eng, Information Engineering, Beijing Institute of Technology, Beijing, P.R.China. GPA: 89/100 (top 1%)

Experience

7/2014–9/2014 Research Intern , Institute of Deep Learning, Baidu, Beijing, P.R.China
Topic: Low-level vision problem solution with deep convolutional neural networks
Mentor: Dr. Chang Huang

12/2013–12/2013 Research Visitor, TU Dresden, Dresden, Germany
Topic: Semantic Image Understanding with Objects and Attributes
Collaborator: Prof.Carsten Rother

2011-2013 Research Assistant, Oxford Brookes Vision Group, Oxford, United Kingdom
Topic: Scene Understanding using New Global Energy Models
Supervisor: Prof. Philip H.S. Torr

Research Interests

Computer vision and deep learning, semantic image segmentation, object detection, biometrics, etc.

Selected Publications

Papers: [Google scholar citations]

S. Zheng, V. Prisacariu, M Averkiou, M. Cheng, N. Mitra, J. Shotton, P.H.S. Torr, and C. Rother. Object proposal estimation in depth images using compact 3D shape manifolds. In *German Conference on Pattern Recognition*, 2015. (oral).

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.

S. Zheng*, S. Jayasumana*, B. Romera-Paredes, V. Vineet, Z. Su, D. Du, C. Huang, and P.H.S. Torr. Conditional random fields as recurrent neural networks. In *IEEE International Conference on Computer Vision* ***IEEE ICCV***, 2015. (*indicates the joint first authors.).

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 Transactions on Graphics (TOG)***, 2014. (*indicates the joint first authors.).

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 International Conference on Computer Vision and Pattern Recognition* ***IEEE CVPR***, 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 International Conference on Computer Vision* ***IEEE ICCV***, 2013.

S. Zheng, P. Sturgess, and P.H.S. Torr. Approximate structured output learning for constrained local models with application to real-time facial feature detection and tracking on low-power devices. In *IEEE International Conference on Automatic Face and Gesture Recognition* ***IEEE FG***, 2013.

S. Zheng, K. Huang, T. Tan, and D. Tao. A cascade fusion scheme for gait and cumulative foot pressure image recognition. ***Pattern Recognition***, 45(10):3603–3610, 2012.

S. Zheng, J. Zhang, K. Huang, R. He, and T. Tan. Robust view transformation model for gait recognition. In *IEEE International Conference on Image Processing* ***IEEE ICIP***, 2011.

Y. Yu, J. Zhang, Y. Huang, **S. Zheng**, W. Ren, K. Huang, and T. Tan. Object detection by context and boosted hog-lbp. In ***Pascal VOC workshop, ECCVW***, 2010. (Performance Rank NO.1 worldwide in the competition).

Published Chinese patents: 1) Pedestrian re-identification based on cumulative foot pressure images $CN101874738A/B$; 2) Head-up display based on frontal face detection $CN101164805B$.

Major Honors & Awards

2015 **Best demo award** at IEEE ICCV for a live demo website for semantic image segmentation.

2014 **Runner-up** for an iOS app (Deep ALE) from the 1st Oxford Hackathon. (Total 500 GBP).

2011 **Recipient** for EPSRC scholarship, Oxford, United Kingdom.

2010 **Winner** in object detection in PASCAL VOC Challenge, European Union funded PASCAL2.

2007 **Recipient** of T-more outstanding innovation student award, Beijing Institute of Technology. (¥$10,000$, top $4/3600+$.)

2007 **Recipient** of the 1st prize award in "Challenge Cup": National academic science and technology competition for college students, Ministry of Education of The People's Republic of China etc.

2007 **Winner** in Web development, Microsoft Imagine Cup, worldwide final, Microsoft. (the 4th place in worldwide final, the 1st place in China)

2007 **Honorable mentioned** award in Annual American Mathematical Contest in Modeling.

Highlighted Research Experience

Semantic image segmentation with CRF-RNN We show that filtering-based mean-field approximate inference method can be reformulated as recurrent neural networks, which can be plugged into a deep convolutional neural network to obtain an end-to-end system that has desirable properties of both CNNs and CRFs. Our approach have obtain the state-of-the-art comparable results in semantic image segmentation comp6 task in PASCAL VOC 2010-2012. The related technique report is published in IEEE ICCV 2015. The demo website has won the best demo award in ICCV 2015. This project is sponsored by EPSRC and ERC.

Semantic image segmentation with objects and attributes: This work aims at the fundamental computer vision problem of semantic image segmentation. It shows that using both objects and visual attributes (e.g. material, reflections) could help to improve the semantic image segmentation, when evaluated on the various benchmarks. Compared to the alternatives, the performance of the proposed system is not only more accurate (at least 5% better) but also runs at interactive time. The technique papers on the initial prototype system have been accepted in ACM TOG and CVPR 2014. This project is sponsored by EPSRC.

Object detection: This work involves to improve the state-of-the-art object detector deformable part based model with feature learning approach. The related algorithm has been proved to be the best worldwide, especially winning the object detection task in PASCAL VOC Challenge 2010. In this project, i am in charge of developing new feature learning approach, and I was involved in the the PASCAL VOC Challenge 2010 NLPR submission.

Talks & Presentations

Poster presentation for Dense Semantic Image Segmentation with Objects and Attributes, *CVPR, Columbus, Ohio, U.S.A*, June, 2014.

Semantic Image Parsing with Objects and Attributes, *Microsoft PhD Summer School, Cambridge, United Kingdom*, July, 2014.

Semantic Image Parsing with Objects and Attributes, *Baidu IDL, Beijing, P.R.China*, July, 2014.

ImageSpirit: Verbal Guided Image parsing, *ACM SIGGRAPH, Los Angeles, U.S.A*, August, 2015.

Poster presentation for Conditional Random Fields as Recurrent Neural Networks, *ICCV, Santiago, Chile*, December, 2015.

Skills

GitHub Profile. I can program with *C++/C, MATLAB, Python, CUDA, and Objective-C*. I also have experiences in using libraries such as OpenCV, Caffe, Torch, TensorFlow, MxNet, Boost.

Professional Activities

Journal reviewer: IEEE TMM TIP, TCSVT TNNLS, SPL; Elsevier PR, PRL, JVCI, NEUCOM; Springer Visual Computing COA, etc.

Conference Program committee or reviewer: ACCV 2014, ICMLA 2012, ACPR 2011, ICIP 2010, ICPR 2010, etc.

Service team member for Vision and Learning Seminar (VALSE) QQ group

References

reference will be provided upon request.

March 28, 2016