

# Sheng He

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I am a research fellow in Boston Children's Hospital, Harvard Medical School. My research interests include machine learning, document analysis and medical image analysis.

## Education

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- **Research Fellow, Boston Children's Hospital, Harvard Medical School, USA**  
*Topic: Medical Image Analysis* 2018.10–present
- **PostDoc, University of Groningen (RUG), the Netherlands**  
*Project: Mantis* 2017.03–2018.09
- **Ph.D.(cum laude, with honor), University of Groningen (RUG), the Netherlands**  
*Thesis: Beyond OCR: Handwritten Manuscript Attribute Understanding* 2013.01–2017.03
- **Master, Northwestern Polytechnical Univ. (NWPU), China**  
*Thesis: Saliency detection in images and videos based on visual attention model* 2009.09–2012.04
- **Bachelor, Northwestern Polytechnical Univ. (NWPU), China**  
*Outstanding graduate student* 2005.09–2009.06

## Awards

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1. 2016 Chinese Government Award for Outstanding Self-Financed Students Abroad (\$6k)

## Publications

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### Book chapter.....

1. One author of chapter 5 of *The MANTIS Book Cyber Physical System Based Proactive Collaborative Maintenance*. [https://www.riverpublishers.com/book\\_details.php?book\\_id=573](https://www.riverpublishers.com/book_details.php?book_id=573)

### Preprint and submitted.....

1. **Sheng He**, Lambert Schomaker. *Open set Chinese character recognition using multi-typed attributes*. arXiv. <https://arxiv.org/pdf/1808.08993.pdf>.
2. **Sheng He**, Lambert Schomaker. *CT-Net: Cascade T-shape deep networks for document binarization*. Under review of IEEE Trans. on Image Processing.
3. **Sheng He**, Lambert Schomaker. *UU-Net: Recurrent refinement networks for document binarization*. Under review of Pattern Recognition.

### Journals.....

1. **Sheng He**, Lambert Schomaker. *FragNet: Writer identification using deep fragment networks*, IEEE Trans. on Information Forensic and Security (**T-IFS**). 2020.  
**(Impact Factor: 6.211)**
2. **Sheng He**, Lambert Schomaker. *DeepOtsu: Document enhancement and binarization using iterative deep learning*, Pattern Recognition (**PR**), vol. 91, pp. 379-390, 2019.  
**(Impact Factor: 5.898)**
3. **Sheng He**, Lambert Schomaker. *Deep adaptive learning for writer identification based on single handwritten word images*, Pattern Recognition (**PR**), vol. 88, pp. 64-74, 2019.

- (Impact Factor: 5.898)**
4. **Sheng He**, Lambert Schomaker. *Writer identification using curvature-free features*, Pattern Recognition (PR), vol. 63, pp. 451-464, 2017.  
**(Impact Factor: 5.898)**
  5. **Sheng He**, Lambert Schomaker. *Beyond OCR: Multi-faceted understanding of handwritten document characteristics*, Pattern Recognition (PR), vol. 63, pp. 321-333, 2017.  
**(Impact Factor: 5.898)**
  6. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *A multiple-label guided clustering algorithm for historical document dating and localization*, IEEE Trans. on Image Processing (T-IP), vol. 25, pp. 5252-5263, 2016.  
**(Impact Factor: 6.79)**
  7. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *Historical manuscript dating based on temporal pattern codebook*, Computer Vision and Image Understanding (CVIU), vol. 152, pp. 167-175, 2016.  
**(Impact Factor: 2.645)**
  8. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *Image-based historical manuscript dating using contour and stroke fragments*, Pattern Recognition (PR), vol. 59, pp. 159-171, 2016.  
**(Impact Factor: 5.898)**
  9. **Sheng He**, Marco Wiering, Lambert Schomaker. *Junction detection in handwritten documents and its application to writer identification*, Pattern Recognition (PR), vol. 48(12), pp. 4036-4048, 2015.  
**(Impact Factor: 5.898)**
  10. Junwei Han, **Sheng He**, Xiaoliang Qian, Dongyang Wang, Lei Guo, Tianming Liu. *An Object-oriented Visual Saliency Detection Framework Based on Sparse Coding Representations*, IEEE Transactions on Circuits and Systems for Video Technology, (T-CSVT), vol. 23(12), pp. 2009-2021, 2013.  
**(Impact Factor: 4.046)**
  11. Junwei Han, Kaiming Li, Ling Shao, Xintao Hu, **Sheng He**, Lei Guo, Jungong Han, Tianming Liu. *Video abstraction based on fMRI-driven visual attention model*, Information sciences, vol. 281, pp. 781-796, 2014.  
**(Impact Factor: 4.305)**

## Conferences.....

1. **Sheng He**, etc. *Brain Age Estimation Using LSTM on Children's Brain MRI*. *IEEE International Symposium on Biomedical Imaging (ISBI) 2020*
2. Maruf A. Dhali, **Sheng He**, Mladen Popovic, Eibert Tigchelaar, Lambert Schomaker. *A Digital Palaeographic Approach towards Writer Identification in the Dead Sea Scrolls*, Int. Conf. on Pattern Recognition Applications and Methods, (ICPRAM2017), 2017. **Oral**
3. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *Discovering visual element evolutions for historical document dating*, Int. Conf. on Frontiers in Handwriting Recognition, (ICFHR2016), 2016. **Oral**
4. **Sheng He**, Lambert Schomaker. *Co-occurrence features for writer identification*, Int. Conf. on Frontiers in Handwriting Recognition, (ICFHR2016), 2016.
5. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *Historical Document Dating using Un-supervised Attribute Learning*, Int. Workshop. on Document Analysis Systems, (DAS2016), 2016. **Oral**
6. **Sheng He**, Lambert Schomaker. *General Pattern Run-length Transform for Writer Identification*, Int. Workshop. on Document Analysis Systems, (DAS2016), 2016. **Oral**
7. **Sheng He**, Lambert Schomaker. *A Polar Stroke Descriptor for Classification of Historical Documents*, Int. Conf. on Document Analysis and Recognition, (ICDAR2015), 2015. **Oral**
8. **Sheng He**, Petros Samara, Jan Burgers, Lambert Schomaker. *Towards style-based dating of historical documents*, Int. Conf. on Frontiers in Handwriting Recognition, (ICFHR2014), 2014. **Oral**
9. **Sheng He**, Lambert Schomaker. *Delta-n Hinge: rotation-invariant features for writer identification*, Int. Conf. on Pattern Recognition, (ICPR2014), 2014. **Oral**
10. **Sheng He**, Junwei Han, Xintao Hu, Ming Xu, Lei Guo, Tianming Liu. *Biologically Inspired Computational*

*Model for Image Saliency Detection*, ACM Int. Conf. on Multimedia, (**ACMMM2011**), 2011.

## Mentoring Experience

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1. Lisette Boeijen (Supervisor, Bachelor's project), April-July, 2016, University of Groningen, *Non-linear combination of features for writer identification*.
2. Xingye Li (Supervisor, Bachelor's project), Sep.2017-July, 2018, University of Groningen, *Performance of deep learning features with different loss functions*.
3. Zhenwei Shi (Daily Supervisor, Master's project), Sep. 2015-Sep. 2016, University of Groningen, *DateFinder: detect the date information in handwriting documents*.

## Other activities

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1. One talk about my paper on ICFHR2016, Shenzhen, China, 24 Oct. 2016.
2. Invited talk about Global Currents project on Digging into data, Glasgow, UK, 28 Jan. 2016.
3. Two talks about my papers on DAS2016, Santorini, Greece, 12 Apr. 2016.
4. One talk about my paper on ICDAR2015, Nancy, France, 24 Aug. 2015.
5. One talk about my paper on ICFHR2014, Crete, Greece, 02 Sep. 2014.
6. One talk about my paper on ICPR2014, Stockholm, Sweden, 25 Aug. 2014.
7. Invited talk about MPS project on International Medieval Congress, Leeds, UK, 02 Jul. 2013.