

## NIE Xuecheng

Vision and Machine Learning Lab;  
#08-24, Block E4, 4 Engineering Drive 3;  
National University of Singapore;  
Singapore, 117583.

Email: niexuecheng@u.nus.edu  
Homepage: <https://niexc.github.io>  
Github: <https://github.com/NieXC>  
Tel: +65-91208242

### Education

---

- **National University of Singapore**, Singapore
  - **Ph.D.** in Department of Electrical and Computer Engineering 2016.08-Present  
*Supervisor: Assis. Prof. FENG Jiashi and Assoc. Prof. YAN Shuicheng*
- **Tianjin University**, Tianjin, China
  - **M.Eng.** in School of Computer Software 2012.09-2015.01  
*Supervisor: Prof. FENG Wei*
  - **B.Eng.** in School of Computer Software 2008.09-2012.06

### Research Interests

---

- Computer Vision, Deep Learning, Human Pose Estimation, Face Detection,

### Publications

---

- **Refereed Journal Papers**
  - [J3] **Xuecheng Nie**, Jiashi Feng, Junliang Xing, Shengtao Xiao, Shuicheng Yan, “Hierarchical Contextual Refinement Networks for Human Pose Estimation”, *IEEE Trans. on Image Processing*, 2018.
  - [J2] Wei Feng, **Xuecheng Nie\***, Yujun Zhang, Lei Xie, Jianwu Dang, “Unsupervised Measure of Chinese Lexical Semantic Similarity Using Correlated Graph Model for News Story Segmentation”, *Neurocomputing*, 2018 (\* indicates corresponding author)
  - [J1] Yan Zheng, **Xuecheng Nie**, Zhaopeng Meng, Wei Feng, and Kang Zhang, “Layered Modeling and Generation of Pollock's Drip Style”, *The Visual Computer*, vol. 31, no. 5, pp. 589-600, 2015.
- **Refereed Conference Papers**
  - [C10] **Xuecheng Nie**, Jiashi Feng, Junliang Xing, Shuicheng Yan, “Pose Partition Networks for Multi-Person Pose Estimation”, in *European Conference on Computer Vision (ECCV)* 2018.
  - [C9] **Xuecheng Nie**, Jiashi Feng, Shuicheng Yan, “Mutual Learning to Adapt for Joint Human Parsing and Pose Estimation”, in *European Conference on Computer Vision (ECCV)* 2018.
  - [C8] **Xuecheng Nie**, Jiashi Feng, Yiming Zuo, Shuicheng Yan, “Human Pose Estimation with Parsing Induced Learner”, in *IEEE Int. Conf. on Computer Vision and Pattern Recognition (CVPR)* 2018.
  - [C7] Shengtao Xiao, Jiashi Feng, Luoqi Liu, **Xuecheng Nie**, Wei Wang, Ashraf A. Kassim, “Recurrent 3D-2D Dual Learning for Large-Pose Facial Landmark Detection”, in *IEEE Int. Conf. on Computer Vision (ICCV)* 2017.
  - [C6] Jian Zhao, Jianshu Li, **Xuecheng Nie**, Fang Zhao, Yunpeng Chen, Zhecan Wang, Jiashi Feng, Shuicheng Yan, “Self-Supervised Neural Aggregation Networks for Human Parsing”, in *IEEE Int. Conf. on Computer Vision and Pattern Recognition Workshops (CVPR Workshops)* 2017.
  - [C5] Shengtao Xiao, Luoqi Liu, **Xuecheng Nie**, Jiashi Feng, Ashraf A. Kassim, Shuicheng Yan, “A Live Face Swapper”, in *ACM Multimedia Conference (MM)* 2016.

[C4] **Xuecheng Nie**, Wei Feng, Liang Wan, Haipeng Dai, and Chi-Man Pun, “Intrinsic Image Decomposition by Hierarchical L0 Sparsity”, in *IEEE Int. Conf. on Multimedia and Expo (ICME)*, pp. 1-6, Jul. 2014.

[C3] Haipeng Dai, Wei Feng, Liang Wan, and **Xuecheng Nie**, “L0 Co-Intrinsic Image Decomposition”, in *IEEE Int. Conf. on Multimedia and Expo (ICME)*, pp. 1-6, Jul. 2014.

[C2] **Xuecheng Nie**, Wei Feng, Liang Wan, and Lei Xie, “Measuring Semantic Similarity by Contextual Word Connections in Chinese News Story Segmentation”, in *IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 8312-8316, May 2013.

[C1] Wei Feng, **Xuecheng Nie**, Liang Wan, Lei Xie, and Jianmin Jiang, “Lexical Story Co-Segmentation of Chinese Broadcast News”, in *13<sup>th</sup> Annual Conf. on the Int. Speech Communication Association (INTERSPEECH)*, pp. 2286-2289, Sep. 2012.

#### ○ **Patents**

[P2] Wei Feng, **Xuecheng Nie**, Ang Yang, and Jianwu Dang, “A Data-Driven Method for Calculating Semantic Similarity of Chinese Words”, Publication No. CN103761225 A, Mar. 2017.

[P1] Wei Feng, Liang Wan, **Xuecheng Nie**, Xiaoni Gao, Jianwu Dang, “A Soft Semantic Similarity Measurement for Chinese News Story Segmentation”, Publication No. CN103793491 B, Jan. 2017.

### Work Experience

- |   |                 |
|---|-----------------|
| ○ <b>Research intern at Snap Inc.</b>                       | 2018.05-2018.08 |
| ○ <b>Intern at Qihoo 360 AI Institute</b>                   | 2015.09-2016.05 |
| ○ <b>Research Assistant at City University of Hong Kong</b> | 2014.05-2014.08 |

### Research Experience

- |   |                 |
|---|-----------------|
| ○ <b>MuLA for Joint Human Parsing and Pose Estimation</b>   | 2017.12-2018.03 |
| <i>Supervisor: Assis. Prof FENG Jiashi, National University of Singapore</i>  |                 |
| <ul style="list-style-type: none"> <li>• Proposed a novel end-to-end model for joint human parsing and pose estimation</li> <li>• Proposed a novel mutual adaptation module for dynamic interactions between tasks</li> <li>• MuLA is capable of iteratively exploiting mutual guidance info</li> <li>• Achieved new state-of-the-art on multiple benchmarks</li> <li>• Published a first-authored refereed paper in ECCV 2018</li> </ul> |                 |
| ○ <b>Human Pose Estimation with Parsing Induced Learner</b>   | 2017.05-2017.11 |
| <i>Supervisor: Assis. Prof FENG Jiashi, National University of Singapore</i>  |                 |
| <ul style="list-style-type: none"> <li>• Proposed a novel model for learning to adapt pose model by using parsing info</li> <li>• The proposed Parsing Induced Learner is transferable across datasets</li> <li>• Achieved new state-of-the-art on multiple benchmarks for human pose estimation</li> <li>• Published a first-authored refereed paper in CVPR 2018</li> </ul>   |                 |
| ○ <b>Generative Partition Network for Multi-Person Pose Estimation</b>  | 2017.02-2017.09 |
| <i>Supervisor: Assis. Prof FENG Jiashi, National University of Singapore</i>  |                 |
| <ul style="list-style-type: none"> <li>• Proposed a new one-pass solution to multi-person pose estimation</li> <li>• Proposed a novel dense regression module for efficient and robust joint partition</li> <li>• Achieved new state-of-the-art on multiple benchmarks</li> <li>• Published a first-authored refereed paper in ECCV 2018</li> </ul>   |                 |
| ○ <b>Complexity-Aware CNN Model for Single-Person Pose Estimation</b>   | 2016.08-2016.12 |
| <i>Supervisor: Assis. Prof FENG Jiashi, National University of Singapore</i>  |                 |
| <ul style="list-style-type: none"> <li>• Proposed a principled way to deal with heterogeneous complexities of body joints</li> <li>• Introduced a Contextual Refinement Unit for exploiting contextual information</li> </ul>   |                 |

- Achieved superior performance and high efficiency
- Written a refereed paper, which has been submitted to TIP (under review)
- **Realtime Face Detection for Mobile Devices** (*Intern*) 2016.02-2016.05  
*Supervisor: Assoc. Prof. YAN Shuicheng, Qihoo 360 AI Institute*
  - Implemented the Fast-RCNN based realtime face detector for mobile devices
  - Simplified CNN architecture for computation acceleration and model size reduction
  - Implemented the Cross- and X-Shape convolution for further acceleration
  - Successfully applied to both Android and IOS systems with speed of 20fps
- **Deep Neural Network for Face Analysis** (*Intern*) 2015.09-2015.12  
*Supervisor: Assoc. Prof. YAN Shuicheng, Qihoo 360 AI Institute*
  - Improved face recognition accuracy on benchmark datasets
  - Implemented Cascade Convolutional Neural Network for face detection
  - Constructed and trained Siamese network for face verification
- **Weakly-Supervised Semantic Similarity** (*Research Assistant*) 2014.05-2014.08  
*Supervisor: Prof. LIU Zhi-Qiang, City University of Hong Kong*
  - Implemented weakly-supervised semantic similarity measurement
  - Improved performance of story co-segmentation with soft semantic similarity
  - Written a refereed paper, which has been submitted to TASLP (under review)
- **Hierarchical L0 Sparsity for Intrinsic Image Decomposition** 2013.09-2014.12  
*Supervisor: Prof. FENG Wei, Tianjin University*
  - Constructed global correlations among pixels in images by L0 sparsity
  - Implemented coarse-to-fine process to propagate correlations by hierarchical model
  - Achieved superior performance on intrinsic image decomposition task
  - Published a first-authored refereed paper in ICME 2014
- **Measuring Semantic Similarity for Chinese Words** 2012.06-2014.12  
*Supervisor: Prof. FENG Wei, Tianjin University*
  - Constructed correlated affinity graph embedding semantic relationships
  - Implemented an iterative affinity propagation to generate semantic similarities
  - Extended cosine similarity to encode latent correlations between different words
  - Achieved 7%~10% F1-measure improvement on benchmark datasets
  - Published a first-authored refereed paper in ICASSP 2013
- **Story Co-Segmentation for Document Analysis** 2011.12-2012.09  
*Supervisor: Prof. FENG Wei, Tianjin University*
  - Proposed the concept of story co-segmentation to extract stories of the same topics
  - Proposed a four-step iterative solution based on Markov Random Field
  - Designed a feasible criterion for common lexical cluster selection
  - Published a second-authored refereed paper in INTERSPEECH 2012

## Awards and Honors

- **1<sup>st</sup> place** in object localization tracks in ILSVRC 2017 2017.06
- **2<sup>nd</sup> place** in 1<sup>st</sup> LIP Challenges on Human Parsing and Pose Estimation 2017.05
- **Hong Kong Ph.D. Fellowship** 2016.03
- **Excellent Postgraduate** of Tianjin University (**Top 2%** / all TJU students) 2015.01
- **National Scholarship** for Graduate Students (**Top 1%** / all TJU students) 2014.12
- **Google Excellence Scholarship** (**Top 2** / all TJU.SCS students) 2013.06
- **Excellent Undergraduate** of Tianjin University (**Top 2%** / all TJU students) 2012.06
- **TEDA-Scope Scholarship** (**Top 5%** / all TJU.SCS students) 2012.06
- **First Prize** for SCS Innovation Fund (**Top 1** / all TJU.SCS students) 2011.06

## Professional Activities

---

- **Serviced as a reviewer for the following journal and conferences:**
  - Elsevier Journal of Neurocomputing
  - IEEE Transactions on Multimedia
- **Teaching Assistant at National University of Singapore** 2017.01-2018.05
  - EE2024: Programming for Computer Interfaces

## Skills

---

- **Programming Skills**
  - C/C++, Python, MATLAB, C#, and LaTeX
- **Deep Learning Frameworks**
  - Caffe and Pytorch
- **Tools**
  - Linux Shell, Vim, Visual Studio, and MATLAB