

Jing Huang

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EDUCATION

University of Southern California, Los Angeles, CA
Ph.D. in Computer Science

Aug. 2010 - Aug. 2016
GPA: 3.9/4.0

Tsinghua University, Beijing, China
B.S. in Computer Software

Aug. 2006 - Jul. 2010
GPA: 90.7/100 (Rank: 1/67)

RESEARCH EXPERIENCE

Computer Vision Team, Facebook AI Applied Research
Research Scientist

Oct. 2016 - Present

- Focusing on computer vision and machine learning in 3D point clouds, satellite imagery and OCR.
- Deployed automatic **pole detection** system in Facebook's **Terragraph** network planning project.
- Applied **Rotated Region Proposal Network** to solve the **rotated text detection** problem.

Computer Graphics and Immersive Technologies Lab, USC
Research Assistant, Advisor: Dr. Suyu You

Aug. 2010 - Aug. 2016

- Specialized in **3D computer vision** research, including **3D shape features and descriptors**, **point cloud matching**, **object detection and recognition**, and **deep learning** for 3D vision.
- Collaborative Research with Chevron U.S.A., Inc. on **Industrial data**:
 - Designed the 3D Self-Similarity **feature descriptor** for 3D point clouds.
 - Delivered a **segmentation and retrieval** system for object detection from industrial point clouds.
 - Pioneered a **bipartite matching** algorithm for object change detection.
- Research on **Urban Object Detection and Recognition**:
 - Devised fast localization methods for **poles, vehicles and trees** from data of **2 billion points**.
 - Developed a 3D object classification method using **PCA** and **SVM**.
 - Invented **Orthogonal-View Convolutional Neural Networks** for **vehicle detection**.
 - Adapted **3D Convolutional Neural Networks** to solve the **3D scene labeling** problem.
 - Boosted the capacity and efficiency of the **3D visualizer** using **LRU Cache** and **LOD**.
- Research on **Image Matching**:
 - Enhanced the 2D self-similarity descriptor with rotation and scale invariance and applied it in image matching.

Computer Graphics and Computer-Aided Design Lab, Tsinghua University Aug. 2009 - June 2010
Research Assistant, Advisor: Dr. Bin Wang

- Established a **3D model search engine** based on 2D shape context and shape matching method.
- Proposed and implemented data exchange algorithm for assemblies using DAG and production rules.

PUBLICATIONS

- **Jing Huang**, Kevin J Liang, Rama Kovvuri, Tal Hassner. Task Grouping for Multilingual Text Recognition. *European Conference on Computer Vision Workshop: Text in Everything (ECCVW)*, Tel Aviv, Israel, October 2022. (**Best Paper**)
- **Jing Huang**, Guan Pang, Rama Kovvuri, Mandy Toh, Kevin J Liang, Praveen Krishnan, Xi Yin and Tal Hassner. A Multiplexed Network for End-to-End, Multilingual OCR. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- Amanpreet Singh*, Guan Pang*, Mandy Toh*, **Jing Huang**, Wojciech Galuba and Tal Hassner. TextOCR: Towards Large-Scale End-to-End Reasoning for Arbitrary-Shaped Scene Text. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- Minghui Liao, Guan Pang, **Jing Huang**, Tal Hassner and Xiang Bai. Mask TextSpotter v3: Segmentation Proposal Network for Robust Scene Text Spotting. *European Conference on Computer Vision (ECCV)*, 2020.

- Ilke Demir, Guan Pang, and **Jing Huang**. A Computer Vision Perspective on Analyzing and Synthesizing Geospatial Data. *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, July 2019.
- **Jing Huang**, Viswanath Sivakumar, Mher Mnatsakanyan and Guan Pang. Improving Rotated Text Detection with Rotation Region Proposal Networks. arXiv preprint arXiv:1811.07031, 2018.
- Ilke Demir, Krzysztof Koperski, David Lindenbaum, Guan Pang, **Jing Huang**, Saikat Basu, Forest Hughes, Devis Tuia and Ramesh Raskar. DeepGlobe 2018: A Challenge to Parse the Earth through Satellite Images. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, Salt Lake City, UT, June 2018.
- Guan Pang, **Jing Huang**, Manohar Paluri, Brian Karrer, Onur Filiz, Birce Tezel, Nicolas Stier-Moses, Vish Ponnampalam and Tim Danford. End-to-end Planning of Fixed Millimeter-Wave Networks. arXiv preprint arXiv:1705.07249, 2017.
- Suya You and **Jing Huang**. Recognizing Objects in 3D Data with Distinctive Self-Similarity Features. *Automatic Target Recognition XXVIII. Vol. 10648. International Society for Optics and Photonics*, 2018.
- **Jing Huang** and Suya You. Point Cloud Labeling using 3D Convolutional Neural Network. *International Conference on Pattern Recognition (ICPR)*, Cancun, Mexico, December 2016.
- **Jing Huang** and Suya You. Vehicle Detection in Urban Point Clouds with Orthogonal-View Convolutional Neural Network. *IEEE International Conference on Image Processing (ICIP)*, Phoenix, AZ, September 2016.
- **Jing Huang** and Suya You. Pole-Like Object Detection and Classification from Urban Point Clouds. *IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, May 2015.
- Guan Pang, Rongqi Qiu, **Jing Huang**, Suya You and Ulrich Neumann. Automatic 3D Industrial Point Cloud Modeling and Recognition. *The 14th IAPR International Conference on Machine Vision Applications (MVA)*, Tokyo, Japan, 2015.
- Guan Pang, Rongqi Qiu, **Jing Huang**, Suya You and Ulrich Neumann. Automatic 3D Industrial Point Cloud Classification and Modeling. *SPE Western Regional Meeting*, Garden Grove, CA, April 2015.
- **Jing Huang** and Suya You. Change Detection in Laser-Scanned Data of Industrial Sites. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa Beach, HI, January 2015.
- **Jing Huang** and Suya You. Segmentation and Matching: Towards a Robust Object Detection System. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Steamboat Springs, CO, March 2014.
- **Jing Huang** and Suya You. Detecting Objects in Scene Point Cloud: A Combinational Approach. *International Conference on 3D Vision (3DV)*, Seattle, WA, June 2013.
- **Jing Huang** and Suya You. Point Cloud Matching based on 3D Self-Similarity. *International Workshop on Point Cloud Processing (Affiliated with CVPR)*, Providence, Rhode Island, June 2012.
- **Jing Huang**, Suya You, and Jiaping Zhao. Multimodal Image Matching using Self-Similarity. *IEEE Applied Imagery Pattern Recognition (AIPR) Workshop*, Washington DC, October 2011.
- Jiaping Zhao, Suya You, and **Jing Huang**. Rapid extraction and updating of road network from airborne LiDAR data. *IEEE Applied Imagery Pattern Recognition (AIPR) Workshop*, Washington DC, October 2011.
- Kaimo Hu, Bin Wang, Yong Liu, **Jing Huang**, and Junhai Yong. An Extended Schema and Its Production Rule-based Algorithms for Assembly Data Exchange using IGES. *The International Journal of Advanced Manufacturing Technology*, Volume 58, Numbers 9-12 (2012), 1155-1170.

- **Jing Huang**, Bin Wang, Kaimo Hu, and Hui Zhang. IGES Data Exchange Algorithm for Assemblies Based on DAG Representation and Production Rules. *Chinagraph 2010/Journal of Engineering Graphics*.

**PROFESSIONAL
ACTIVITIES**

- Co-organizer of CVPR 2018 Workshop *DeepGlobe: A Challenge for Parsing the Earth through Satellite Images*.
- Technical Committee for CVPR 2019 Workshop *EARTHVISION 2019*.
- Reviewer for IROS (2017, 2018, 2019), ISPRS, 3DV (2017), CASA (2018), etc.

SKILLS

- Programming: C/C++, Python, PHP
- Libraries: Caffe2, PCL, OpenCV, Theano, OpenGL, MatLab

AWARDS

Viterbi Dean's Doctoral Fellowship of USC	2010
8th place in the ACM/ICPC Southern California Regional Contest	2010
3rd place in the Fall 2010 USC Programming Contest	2010
3rd place in Humanoid Teen-size League, Robot Soccer World Cup (RoboCup), Singapore	2010
1st place in Software Design Competition of Tsinghua University	2009
National Scholarship (First Class)	2009
Kaifeng Foundation Scholarship (First Class)	2008
Suzhou Industrial Park Scholarship (First Class)	2007