

Chen Huang

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Summary of Qualifications

- Solid knowledge in state-of-art computer vision and machine learning techniques
- Rich experience in deep learning, weakly supervised learning and image retrieval
- Excellent coding skills in C/C+, Python, Matlab and related software packages
- Strong aptitude for working on multiple projects in fast-paced environment

Education

- 2011–2017 **Ph.D**, in *Electrical and Computer Engineering*, University of Missouri, Columbia.
research interest: deep learning, object detection, fine-grained recognition
- 2006–2010 **B.Sc**, in *Electrical Engineering*, Beihang University, Beijing.

Industrial Experience

- 2017–now **Deep Learning Engineer**, *Apple Inc*, Cupertino, USA.
Job Responsibility: Developing the tools to map deep learning networks to customized hardware, fine-tuning workflow to optimize for best performance & power trade-off, and designing and implementing algorithms
- 2017–2017 **Research Intern**, *Microsoft Research*, Redmond, USA.
Job Responsibility: Applying deep learning techniques on new sensing modalities for human detection, tracking and activity recognition
- 2016–2016 **Research Intern**, *Apple Inc*, Cupertino, USA.
Job Responsibility: Conducting research on compressing convolutional neural networks for confidential projects
- 2014–2015 **Research Intern**, *TCL Research America*, San Jose, USA.
Job Responsibility: Pushing achievements of scientific researches into products
- Proposed a image classifier based on opponent-SIFT feature, Fisher Vector Encoder and linear SVM for commercial products image recognition
 - Developed an one-shot visual instance search algorithm to retrieval user-defined objects (like Channel handbags or Nike shoes) in large-scale videos;
- 2010–2011 **Research Intern**, *National Laboratory of Pattern Recognition*, Beijing, China.
- Developed a visual tracking and analysis tool for commercial traffic surveillance system;

Publications

Zhihai He, Roland Kays, Zhi Zhang, Guanghan Ning, Chen Huang, Tony X. Han, Josh Millsbaugh, Tavis Forrester, and William McShea. Visual informatics tools for supporting large-scale collaborative wildlife monitoring with citizen scientists. *IEEE Circuits and Systems Magazine*, 16(1):73–86, 2016.

Chen Huang, Tony X Han, Wenming Cao, and Zhihai He. Constellational contour parsing for deformable object detection. *Journal of Visual Communication and Image Representation*, 2016.

Chen Huang, Tony X Han, and Zhihai He. Multi-scale embedded descriptor for shape classification. *Journal of Visual Communication and Image Representation*, 25(7):1640–1646, 2014.

Chen Huang and Zhihai He. Task-driven progressive part localization for fine-grained recognition. In *Applications of Computer Vision (WACV), 2016 IEEE Winter Conference on*, 2016.

Chen Huang, Zhihai He, and Wenming Cao. Task-driven progressive part localization for fine-grained recognition. *IEEE Transactions on Multimedia*, 2016.

Guanghan Ning, Zhi Zhang, Chen Huang, Xiaobo Ren, Haohong Wang, Canhui Cai, and Zhihai He. Spatially supervised recurrent convolutional neural networks for visual object tracking. In *Circuits and Systems (ISCAS), 2017 IEEE International Symposium on*, pages 1–4. IEEE, 2017.

Research Project

- 2015–2016 **Recurrent YOLO for object tracking**, .
- Developed a new approach of spatially supervised recurrent convolutional neural networks for visual object tracking;
 - Used regression for direct prediction of the tracking locations both at the convolutional layer and at the recurrent unit;
 - Outperformed state-of-the-art tracking methods on challenging benchmark video tracking datasets;
- 2015–2016 **Weakly Supervised Discriminative Feature Learning**, .
- Trying to automatically localize most discriminative regions for tasks like classification, given just image-level label (weakly-supervised)
 - Will test on Fine-grained recognition datasets (still under development)
- 2014–2015 **Task Driven Part Localization for Fine-grained Image Categorization**, .
- Proposed a novel algorithm to localize birds in clutter image as well as their semantic parts;
 - Leveraged fine-tuned CNNs features via Caffe to construct pose-normalized image representation;
 - Tested on Caltech-UCSD Bird 2011 datasets, achieved **81.69%** classification rate;
 - Published in **WACV 2016**; extended version published in **IEEE Transactions of Multimedia**;
- 2012–2013 **Shape-based Object Retrieval**, .
- Constructed a framework that retrieval objects in cluttered images given a sketch as query;
 - Boosted searching speed by applying dynamic programming;
 - Tested on ETHZ Shape Classes, got **0.876** Mean AP, which is among the state-of-art results, and **0.959/0.959** detection rate for 0.3/0.4 FPPI, which beats other recent publications;
 - Published in **Journal of Visual Communication and Image Representation**;

2011–2012 **Shape Representation and Recognition**,

- Developed a new scale-invariant feature for shape description and representation;
- Classified our new shape feature using Support Vector Machine;
- Tested on standard public datasets, got **98.40%** classification rate on Swedish Leaf dataset and **92.88%** on MPEG-7, which are among the state-of-art;
- Published in **Journal of Visual Communication and Image Representation**;

Awards and Honors

2016 **Student Travel Grant**, WACV2016

2011–now **Research Assistantship**, *University of Missouri*

2010 **Outstanding Student Scholarship**, *Beihang University*

2007 **National Scholarship for Encouragement**, *Beihang University*

Skills Set

Programming JAVA, C/C++, Python, MATLAB

Web HTML5, JavaScript, Jekyll, Bootstrap

Package TensorFlow, Caffe2, PyTorch, MXNet

Others L^AT_EX, Markdown, CMake, Valgrind

Professional Network

HomePage chenhuang.me/

GitHub github.com/rocksat

LinkedIn [linkedin.com/in/huangchen1988](https://www.linkedin.com/in/huangchen1988)

References

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