

Chen-Ping Yu

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ACADEMIC POSITIONS

Harvard University Cambridge, MA
Postdoctoral Fellow, Cognitive and Neural Organization Lab 2016 - Present

- Research area: biologically-consistent deep learning models of the ventral visual pathway, fMRI analysis, high-level visual cortical topography, functional connectivity of the visual cortex
- Supervisor: Professor Talia Konkle

EDUCATION

Stony Brook University Stony Brook, NY
Ph.D., Computer Science 2016

- Research area: computer vision, machine learning, computational models of clutter perception and visual search, proto-objects, brain-inspired ventral stream deep learning networks, image and video segmentation, graph-based clustering, categorical feature representations
- Dissertation: “*Computational models of visual features: from proto-objects to object categories*”
- Advisors: Professor Dimitris Samaras, and Professor Gregory Zelinsky

Pennsylvania State University University Park, PA
M.S., Computer Science & Engineering 2010

- Research area: computer vision, machine learning, neuroimage analysis.
- Thesis: “*Statistical asymmetry-based automatic brain tumor detection from 3D MR images*”
- Advisor: Professor Yanxi Liu

Rochester Institute of Technology Rochester, NY
M.S., Computer Science 2008

- Research area: computational neuroscience, receptive field models, biologically-inspired machine vision
- Thesis: “*Computational model of MST neuron receptive field and interaction effect for the perception of self-motion*”
- Advisors: Professor Roger Gaborski, and Professor Charles Duffy

Rochester Institute of Technology Rochester, NY
B.S., Computer Science, minor in Psychology 2005

GRANTS AND AWARDS

ComputeFest Exploratory Visualization Contest Finalist 2017
Prodigy Finance

GSEU Professional Development Award 2016
Stony Brook University

Doctoral Consortium Travel Award International Conference on Computer Vision (ICCV)	2015
Student Travel Award Advances in Neural Information Processing Systems (NIPS)	2013
EAPSI Fellowship National Science Foundation (NSF)	2013
Department Chair Fellowship Stony Brook University	2010-2011
Full Graduate Assistantship Stony Brook University	2010-2016
College of Engineering Fellowship Pennsylvania State University	2008
Full Graduate Assistantship Pennsylvania State University	2008-2010
Outstanding Graduate Student Award Rochester Institute of Technology	2008
Graduate Scholarship Grant Rochester Institute of Technology	2006-2008
Dean's Honors List Rochester Institute of Technology	2005

MANUSCRIPTS

- [..] Hou, L., **Yu, C.-P.**, & Samaras, D. (*submitted*). Squared earth mover's distance-based loss for training deep neural networks.
- [..] Le, H., **Yu, C.-P.**, Zelinsky, G., & Samaras, D. (*submitted*). Co-localization with category-consistent CNN features and geodesic distance co-propagation.
- [..] **Yu, C.-P.**, Liu, H., Samaras, D., & Zelinsky, G. (*in preparation*). Modeling categorical search guidance using a convolutional neural network designed after the ventral visual pathway.
- [..] Long, B., **Yu, C.-P.**, & Konkle, T. (*in preparation*). A mid-level organization of the ventral stream.
- [..] Chen, Y., **Yu, C.-P.**, & Zelinsky, G. (*in preparation*). Adding shape to saliency: a computational model of shape contrast.

PEER-REVIEWED PUBLICATIONS

- [1] **Yu, C.-P.**, Maxfield, J., & Zelinsky, G. (2016). Searching for category-consistent-features: a computational approach to understanding categories. *Psychological Science*, 27(6), 870-884.
- [2] Le, H., Nguyen, V., **Yu, C.-P.**, & Samaras, D. (2016). Geodesic distance histogram feature for video segmentation. In *Asian Conference on Computer Vision (ACCV)*, Taipei, Taiwan.
- [3] Vicente, T. Y., Hou, L., **Yu, C.-P.**, Nguyen, M. H., & Samaras, D. (2016). Large-scale training of shadow detectors with noisily-annotated shadow examples. In *European Conference on Computer Vision (ECCV)*, Amsterdam, the Netherlands.

- [4] **Yu, C.-P.**, Le, H., Zelinsky, G., & Samaras, D. (2015). Efficient video segmentation using parametric graph partitioning. In *International Conference on Computer Vision (ICCV)*, Santiago, Chile.
- [5] Zelinsky, G., & **Yu, C.-P.** (2015). Clutter perception is invariant to image size. *Vision Research*, 116(Pt B), 142-151.
- [6] **Yu, C.-P.**, Samaras, D., & Zelinsky, G. (2014). Modeling visual clutter perception using proto-object segmentation. *Journal of Vision*, 14(7), 1-16.
- [7] **Yu, C.-P.**, Ruppert, G., Collins, R., Nguyen, D., Falcao, A., & Liu, Y. (2014). 3D blob based brain tumor detection and segmentation in MR images. In *International Symposium on Biomedical Imaging (ISBI)*, Beijing, China.
- [8] **Yu, C.-P.**, Hua, W.-Y., Samaras, D., & Zelinsky, G. (2013). Modeling clutter perception using parametric proto-object partitioning. In *Advances in Neural Information Processing Systems (NIPS)*, Lake Tahoe, CA.
- [9] Vicente, T. Y., **Yu, C.-P.**, & Samaras, D. (2013). Single image shadow detection using multiple cues in a supermodular MRF. In *British Machine Vision Conference (BMVC)*, Bristol, UK.
- [10] **Yu, C.-P.**, Ruppert, G., Nguyen, D., Falcao, A., & Liu, Y. (2012). Statistical asymmetry-based brain tumor segmentation from 3D MR images. In *International Conference on Bio-inspired Systems and Signal Processing (BIOSTEC)*, Vilamoura, Portugal.
- [11] Ruppert, G., Teverovskiy, L., **Yu, C.-P.**, Falcao, A., & Liu, Y. (2011). A new symmetry-based method for mid-sagittal plane extraction in neuroimages. In *International Symposium on Biomedical Imaging (ISBI)*, Chicago, IL.
- [12] **Yu, C.-P.**, Page, W., Gaborski, R., & Duffy, C. (2010). Receptive field dynamics underlying MST neuronal optic flow selectivity. *Journal of Neurophysiology*, 103(5), 2794-2807.
- [13] **Yu, C.-P.**, Page, W., Duffy, C., & Gaborski, R. (2009). Computational model of cortical neuronal receptive fields for self-motion perception. In *Applied Imagery and Pattern Recognition Workshop (AIPR)*, Washington D.C., USA.

CONFERENCE PRESENTATIONS

- [1] **Yu, C.-P.**, & Konkle, T. (2017). Map-CNN: A convolutional neural network with map-like organizations. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [2] Zelinsky, G., & **Yu, C.-P.** (2017). Modeling categorical search guidance using a convolutional neural network designed after the ventral visual pathway. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [3] Le, H., **Yu, C.-P.**, Samaras, D., & Zelinsky, G. (2017). Object detection and localization for free from category-consistent CNN features. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [4] **Yu, C.-P.**, Maxfield, J., & Zelinsky, G. (2016). Generating the features for category representation using a deep convolutional neural network. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.

- [5] Maxfield, J., **Yu, C.-P.**, & Zelinsky, G. (2016). Predicting categorical search behavior on individual trials using category-consistent features. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [6] Chen, Y., **Yu, C.-P.**, & Zelinsky, G. (2016). Adding shape to saliency: a proto-object saliency map for predicting fixations during scene viewing. Talk presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [7] **Yu, C.-P.**, & Zelinsky, G. (2015). Effects of image size on clutter perception: more evidence for proto-object segmentation. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [8] Maxfield, J., **Yu, C.-P.**, & Zelinsky, G. (2015). Searching through the hierarchy: modeling categorical search using class-consistent features. Talk presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [9] **Yu, C.-P.**, Samaras, D., & Zelinsky, G. (2014). Modeling visual clutter perception using proto-object segmentation. Poster presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [10] Maxfield, J., **Yu, C.-P.**, & Zelinsky, G. (2014). Searching through the hierarchy: a behavioral and computational approach to understanding categorical search. Talk presented at the annual meeting of the *Vision Sciences Society*, St. Pete Beach, FL.
- [11] Koshy, D., **Yu, C.-P.**, Nguyen, D., Kashyap, S., Collins, R., & Liu, Y. (2011). Supervised machine learning for brain tumor detection in structural MRI. Talk presented at the annual meeting of the *Radiology Society of North America*, Chicago, IL.
- [12] **Yu, C.-P.**, Page, W., Gaborski, R., & Duffy, C. (2008). Modeling MST optic flow responses using receptive field segmental interactions. Poster presented at the annual meeting of the *Society for Neuroscience*, Washington D.C., USA.
- [13] **Yu, C.-P.**, Page, W., Gaborski, R., & Duffy, C. (2007). Modeling the receptive field organization of optic flow selective MST neurons. Poster presented at the annual meeting of the *Society for Neuroscience*, San Diego, CA.

PROFESSIONAL ORGANIZATIONS

Vision Sciences Society member
 IEEE member
 ACM member
 Society for Neuroscience member

AD-HOC REVIEWING

PLoS ONE
 Advances in Neural Information Processing Systems (NIPS)
 Computational and Mathematical Methods in Medicine

TALKS AND PRESENTATIONS

Searching for category-consistent-features: a computational approach to understanding categories

Apr 2017

Visual Attention Lab – Harvard Medical School

Category-consistent features for object category representation Harvard Vision Sciences Lab	Feb 2016
Parametric graph partitioning and its applications JP Morgan Chase Tech Talk Series	Jul 2015
Modeling visual clutter perception using proto-objects Stony Brook University Cognitive Science Colloquium	Oct 2014
Visual search and image clutter Shutterstock Tech Talk	Feb 2014

TEACHING EXPERIENCES

Stony Brook University Guest Lecturer, Advanced Computer Vision Teaching Assistant, Computational Biology Teaching Assistant, Analysis of Algorithms Teaching Assistant, Programming in JAVA	Stony Brook, NY Spring 2015 Fall 2011 Fall 2011 Spring 2010
Pennsylvania State University Teaching Assistant, Intro to Computer Graphics Teaching Assistant, Scientific Programming using Matlab Teaching Assistant, Data Structure and Algorithms	University Park, PA Fall 2009 Spring 2009 Fall 2008

RELATED PROFESSIONAL EXPERIENCES

Kernel Deep learning and modeling consultant <ul style="list-style-type: none"> Provide expertise in deep learning techniques and modeling advices for the development of human neural prosthesis 	Venice, CA 2016
Shutterstock Computer vision intern <ul style="list-style-type: none"> Develop deep learning models for mapping search queries to images Research in deep convolutional neural networks (CNNs) for face detection, age estimation, and language classification using Torch7 and Caffe in Python Research in LSTM recurrent networks (RNNs) for learning language representations 	New York, NY 2015
Riverbed Technologies Research intern <ul style="list-style-type: none"> Research in locality sensitive hashing schemes (LSH) for efficient data de-duplication Implement and analyze existing LSH methods (E2LSH, min-hash, simhash) in C++ 	Sunnyvale, CA 2010
Carnegie Mellon University, Robotics Institute Research assistant <ul style="list-style-type: none"> Research in 3D neuroimage processing for computer aided diagnosis of Alzheimer's disease Dana analysis and mining using statistical machine learning techniques 	Pittsburgh, PA 2009
University of Rochester Medical Center, Cognitive Neuroscience Lab Research analyst programmer <ul style="list-style-type: none"> Develop and implement research software to assess impaired human navigation in Alzheimer's disease Develop computational model for MST single neuron receptive fields 	Rochester, NY 2004-2008

University of Washington

Research assistant

Seattle, WA

2003

- Analyze the computational load and efficiency of the 3D graphics rendering farm