Mr. Yu Zhang

General Information

Date of birth: April 26, 1990
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Education

Beihang University, Beijing, China

Ph.D. Candidate, Computer Science, Fall 2012 - Present

B.Eng., Computer Science and Engineering, Fall 2008 - July 2012, GPA - 3.81/4.0

Publications

Yu Zhang, Wei Teng, Xiaowu Chen, Jia Li, Zhiqiang He. Local Shape Transfer for Image Co-segmentation. British Machine Vision Conference (BMVC), 2016. (**Oral paper**, **10% acceptance**)

Yu Zhang, Xiaowu Chen, Jia Li, Chen Wang, Changqun Xia, "Semantic Object Segmentation via Detection in Weakly Labeled Video", Computer Vision and Pattern Recognition (CVPR), 2015. (**Oral paper**, **3.3% acceptance**, **CCF recommended conference at class A**)

Yu Zhang, Xiaowu Chen, Liang Lin, Changqun Xia, High-Level Representation Sketch for Video Event Retrieval, SCIENCE CHINA Information Sciences (SCIS), Vol. 59, No. 7, pp.072103, 2016 (**SCI indexed, CCF recommended journal at class B**)

Yafei Song, Xiaowu Chen, Xiaogang Wang, **Yu Zhang**, Jia Li, "Fast estimation of relative poses for 6-DOF image localization", BigMM 2015. (**Best paper award**)

Han Zhang, Xiaowu Chen, **Yu Zhang**, Jia Li, Qing Li, Xiaogang Wang, Cuboids Detection in RGB-D Images via Maximum Weighted Clique. ICME 2015.

Qing Li, Xiaowu Chen, Yafei Song, **Yu Zhang**, Geodesic Propagation for Semantic Labeling, IEEE Transactions on Image Processing (TIP), Vol.23, No.11, pp.4812-4825, 2014.

Kai Jiang, Xiaowu Chen, **Yu Zhang**, Qinping Zhao, Video Event Representation and Inference on And-Or Graph, Computer Animation and Virtual Worlds (CAVW), Vol. 23, Issue 3-4, pp.145-154, 2012. (**SCI indexed**, **CCF recommended journal at class C**).

Papers in preparation

Yu Zhang, Xiaowu Chen, Jia Li, Chen Wang, Changqun Xia, Jun Li. Semantic Object Segmentation in Tagged Video via Detection. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2016. (**minor revision**, **CCF recommended journal at class A**)

Yu Zhang, Xiaowu Chen, Jia Li, Wei Teng, Haokun Song. Exemplar-Driven Video Object Segmentation via Submodular Proposal Selection.(under review)

Primary Research Experience

Graduate Student, State Key Laboratory of System & Technology, Beihang University
Advisors: Prof. Xiaowu Chen and Prof. Jia Li

Object Segmentation in Weakly Labeled Videos **Nov. 2013 - March 2017**

- Proposed novel segmentation-by-detection approaches for weakly labeled videos, which can effectively delineate the visual objects from videos by requiring keywords only (e.g., *dog*). Achieved state-of-the-art results on the Youtube-Objects dataset widely used by the research community.
- Primary paper writer, first author of the accepted CVPR 2015 and the submitted ICCV 2017 and TPAMI 2016 papers.

Cuboid Detection in RGB-D Images **July 2014 - Dec. 2014**

- Formulated 3D cuboid detection in indoor RGB-D images with maximum weighted clique. Combined various potentials to encode physical/geometric properties/relationships of indoor objects. Significantly improved detection f-scores on NYU-V2 dataset compared with state-of-the-art.
- Primary paper writer, co-author for the accepted ICME 2015 paper.

Semantic Segmentation in Images and Videos **May 2013 - Sept. 2013**

- Implemented a non-parametric semantic segmentation algorithm built on geodesic propagation theories for a single image. Augmented the approach with learned propagation indicators encoding the contextual relationships among semantic categories. Achieved state-of-the-art results on CamVid and LHI datasets, and competitive results on CBCL dataset.
- Integrated the spatial geodesic propagation with a Markov random field defined on spatiotemporal graph to generate temporally consistent segmentation results for video sequences.
- Co-author for the published TIP 2014 paper.

Sketch-based Video Event Retrieval **Nov. 2012 - Apr. 2013**

- Proposed a novel framework for retrieving videos with a pre-specified evolution process, which is interactively sketched by users on a virtual board.
- Made two technical contributions: 1) a novel high-level representation of spatotemporal layouts of video events, and 2) the matching algorithm between the query sketch and the database video based on Data-Driven MCMC framework.
- Primary paper writer, first author for the submitted journal paper (under major revision).

Video Event Representation and Inference **Mar. 2012 - Aug. 2012**

- Designed the and-or graph representation for soccer goal events. Developed the bottom-up search and top-down refinement strategies for graph inference.
- Co-author for the published CAVW 2012 paper.

Project Experience

Graduate Student, State Key Laboratory of System & Technology, Beihang University
Advisors: Prof. Xiaowu Chen and Prof. Jia Li

National Key Technology R&D Program: Structural Representation of Surveillance Videos
Primary project assistant **Jan. 2012 - June 2015**

- Designed and implemented the software to track multiple video agents, parse their behaviours, and construct/manage the and-or representations to support different types of events.
- Assisted in implementing the video annotation system that allows users to manually label the objects, interactions and events in surveillance videos, as well as to manage the ontologies of surveillance knowledge.

Awards

- The Excellent Graduate Innovation Fund, Beihang University, 2017
- The National Graduate Scholarship, 2015
- The Graduate Innovation Award, School of Computer Science, Beihang University, 2014
- Changzhao Qian & Xingyuan Shen Scholarship (1st Prize), Beihang University, 2011
- Excellent Student Award, Beihang University, 2010 - 2011
- Undergraduate Mathematical Contest (1st Prize, Rank 1st), Beihang University, 2009
- The National Undergraduate Mathematical Contest (Second Prize in Beijing Region), 2009

Skills

- Mastering in Matlab, writing readable codes in C/C++ and Python codes with daily experience
- Knowledgable of basic pipelines/algorithms for visual understanding problems
- Familar with modern machine learning/optimization techniques
- Capable of development/documentation with various systems and softwares: Windows/Linux, Visual Studio, Eclipse, Qt Creator, PyCharm, LaTex, Office, etc.