KAI CHEN

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EDUCATION

Fudan University(FDU), Shanghai, China   *Sep 2016 - Jun 2020*
B.S. in **Computer Science**, Minor in **Economics**
Overall GPA: 3.7/4.0, Major GPA: 3.91/4.0, Ranking: 3/32
Adviser: [Prof. Xipeng Qiu](#) @ [FudanNLP](#)

University of Manchester, Manchester, UK   *Sep 2018 - Jan 2019*
Exchange student in Computer Science, advised by [Dr. Tingting Mu](#)

Indiana University Bloomington, Bloomington, USA   *June 2019 - Sep 2019*
GTAP Scholar, advised by [Prof. David Crandall](#) @ [IU Computer Vision Lab](#)

PUBLICATIONS

- Md Alimoor Reza, Akshay Naik, **Kai Chen**, David Crandall, "Automatic Annotation for Semantic Segmentation in Indoor Scenes," *IEEE International Conference on Intelligent Robots and Systems (IROS), 2019*

HONORS

National Scholarship for Outstanding Students (1%, by Ministry of Education of P.R.China)   Sep 2018
Joel & Ruth Spira Scholarship (1%, by [Lutron](#))   Mar 2019
Scholarship for Outstanding Undergraduate Students (5%)   Oct 2017
Outstanding undergraduate of Fudan University (10%)   May 2018 & Oct 2017
1st Prize - "ChuangQingChun" Enterprising Competition FDU Division(10%)   Feb 2018

RESEARCH EXPERIENCE

Automatic Annotation for Semantic Segmentation in Indoor Scenes   June 2019 - present
Undergraduate Research   *Advisor:[Dr. Md Reza](#) and [Prof. David Crandall](#), IUB*

· Expensive to get image semantic labels manually, so it's necessary to generate image semantic annotation automatically without any ground truth labels. Using together with human annotation, we hope we can get a better segmentation (e.g. FCN) model
· Structural scene understanding separates an image to 2 parts first: foreground and background. We use Mask RCNN to detect foreground objects and 3D layout segmentation to recognize background information separately.
· We gather this two information together using a well-defined energy function to find best annotation
· Now we are trying to find a way *'fine tuning'* our Mask RCNN detector without access to any ground truth labels to improve the result

Few Shot Image Classification with Multiple Image Views   June 2019 - present
Undergraduate Research   *Advisor: [Prof. David Crandall](#), IUB*

· Idea: instead of seeing thousands of chair images, we think humans learn to recognize a chair by seeing a chair from multiple views and generating a 3D chair model in their memory
· Based on *Geometry-Aware Recurrent Network* [link], our model uses RGB input to generate a 3D feature tensor and updates a 3D GRU memory at each image view

· Experiments based on CORE50 Dataset which only contains multiple view images for 50 objects, 10 classes in all and 5 for each class

Unsupervised Object Detection using Variational AutoEncoder

Undergraduate Research   Feb 2019 - June 2019

Advisor:Prof. Bin Li and Prof. Xiangyang Xue, FDU

· Idea: structural image understanding sees one object at a time and joins them together to get a big picture.
· Try to do object detection on special raw images (e.g. MINST) in a unsupervised way without ground truth.
· Based on *AIR* [link], our model uses an RNN to encode one object at a time and learns to figure out how many objects there are in this image so that we can get variable-length latent representation for different images
· Use VAE to re-generate the image to get training signal

Link Prediction on Weighted Signed Social Network

Undergraduate Research   July 2018 - April 2019

Advisor:Prof. Yitong Wang, FDU

· Focus on link prediction problems in Weighted Signed Social Network (WSN)
· Come out an algorithm called MFLG, a new network embedding algorithm based on matrix factorization. We embed each node with two vecotrs, one *subjective* one *objective*
· We use *random work* to get related node pairs which aren't connected directly to combine global social network features with local features (adjacent node pairs)
· We add regularization to get correct sentiment results when two predictions have same square error (e.g. when answer is 1, choose 3 instead -1)
· Use different algorithms' prediction results as features to train a linear regression model and get a more robust model
· Summarize our work into a paper as the third author (waiting for notification)

CAMPUS EXPERIENCE

Vice President of Kicking and Rolling Club in FDU

Sep 2018 - June 2019

· Responsible for kicking and Rolling competition of FDU in every semester
· Responsible for enrollment and training of FDU's kicking and rolling school team

46th Fudan University Student Committee Member

Sep 2017 - June 2018

· Implement student rights on behalf of CS students e.g. selecting the Student Union President of the yea
· Transfer students' opinions about campus to relevent school department
· Submit a proposal giving advice on FDU teaching building reconstruction and won the 3rd price in the proposal competition

Project Assistant of FDU Junior Achievement

Sep 2016 - June 2017

· Lead a team to take part in Bottom Of Pyramid (BOP) business competition 2017
· Responsible for holding regular BOP lectures for FDU students

TECHNICAL SKILLS

Program Languages	Python, Matlab, C/C++/C#, SQL, Latex
Framework	Pytorch, Tensorflow
Language	Native in Mandarin Chinese, Fluent in English
	CET-4(649), CET-6(619), IELTS(6.5)