Lingkun Kong

http://ohyoukillkenny.github.io

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SEIEE Buildings 1-441, SJTU

Education

- **Shanghai Jiao Tong University** — Shanghai, China
  Department of Computer Science — *Feb. 2016–Jul. 2018 (expected)*
  - BS in Computer Science, Technology & Engineering Honor Class, *Dept. of CS-Zhiyuan College joint program*
  - Major GPA: **92.88/100**, Cumulative GPA: **91.89/100**

  School of Mechanical Engineering — *Sept. 2014–Jan. 2016*
  - Engineering Pilot Class, Cumulative GPA: **88.33/100**
  - Good mathematics training with advanced elementary courses, including *Calculus, Linear Algebra, Probability & Statistics*
- **Cornell University** — Ithaca, NY
  Computer Science Department, Visiting Student — *Jun.–Jul. 2017*
  - Course: Programming Languages and Logics given by Prof. David Gries

Research Interests

- Network Privacy & Security, Distributed Systems, Machine Learning

Publications

- **L. Kong**, F. Deng, J. Liu, J. Zhao, L. Fu, X. Wang, *"MSM: A Multi-entity Scholarly Model for Systematic Understanding of Evolving Scholarly Networks"*, submitted to WWW 2018
- **L. Kong**, X. Wu, H. Zhu, L. Fu, X. Wang, G. Chen, *"Evolving Bipartite Model Reveals the Bounded Weights in Social Networks: A Case Study in Recommendation Networks"*, submitted to MobiHoc 2018

Patents

- J. He, Y. Huang, **L. Kong**, J. Shen, C. Liu, Y. Jia, H. Xiao, W. Tang, T. Hu, L. Fu, X. Wang, *"An Method to Construct & Visualize the Heterogeneous Topic Network Based on Text Information"*, CHN No. 106372147A, Approved Feb. 1^{st} 2017

Research Experience

- **Bancor Simulator:** *Simulator for Market Analysis under Bancor Protocol* — *Jul 2017-Present*
  Research Assistant, supervised by Prof. Emin Gün Sirer
  - *Goal:* to build a simulator monitoring market performance under Bancor protocol to explore the robustness and efficiency of Bancor.
  - Construct the simulator framework, mainly consisting of four classes - Smart Token, Customer, Bancor Market and Classic Market.
  - Propose and build the simulation model for both Bancor market and classic market, run experiments in multiple circumstances.
  - Experiemntal results show that Bancor protocol is flawed in three aspects:

    a) The problem about "Double Coincidence of Wants" Bancor wants to solve is unsubstantiated in real world, and even assuming the problem does exist, Bancor protocol cannot ensure its superiority to classic market.

    b) The price of smart token, i.e. currency in Bancor protocol could fluctuate significantly, since Bancor neglects potential human behavior.

    c) Severe cancellation of concurrent transactions occur to Bancor under limited order.
- **Evolving Bipartite Model Reveals the Bounded Weights in Social Networks** — *Nov. 2017*
  Research Assistant, supervised by Prof. Xinbing Wang & Prof. Luoyi Fu
  - *Goal:* to propose a novel evolving bipartite model (EBM) that highlights the establishment of social connections for new vertices and the characterization of their behaviors based on weighting-driven preferential attachment.
  - Launch observation based on 10 real public social network datasets, including 6 datasets about recommendation networks, 3 datasets about scholarly networks and a dataset about the Twitter social network.
  - Prove the superiority of the proposed model in three aspects: good capture of realistic social networks, mathematically tractability and novelty in predicting the bounds of final weights of connections.
  - Investigate the beginning of the item vertex distribution, which resembles the expected rating pmf for new items.

- **Multi-entity Scholarly Model for Systematic Understanding of Evolving Scholarly Networks** *Jun. 16-Oct. 17*
  Research Assistant, supervised by Prof. Xinbing Wang & Prof. Luoyi Fu
  - *Goal:* to incorporate different kinds of entities (i.e., paper, author and topic) into an entirety to generate a systematic understanding of scholarly networks at scale.
  - Observe patterns in the growth of the scholarly network via massive data mining and analysis on scholarly datasets Microsoft Academic Graph, containing 126 million papers.
  - Establish a comprehensive modeling of evolving scholarly networks, jointly capturing both intra and inter correlations of papers, authors and topics during the evolving process during network evolving process.
  - Provide strong theoretical guarantees for Multi-entity Scholarly Model via constructing methods of random arrival, preferential attachment, edge copying and the assumption of the affiliation relationship inside entities.
- **Are Scholarly Domains Crossable?** *Feb.-Jun. 2017*
  Research Assistant, supervised by Prof. Xinbing Wang & Prof. Luoyi Fu
  - *Goal:* to explore the possible existence of scholarly cross-domain collaborations.
  - Quantify "crossability", to evaluate the capability of two scientific domains to establish collaborations.
  - Propose a Gaussian-like model based the citation count of a paper to predict the papers future citation.
  - Train the peak pattern model in the correlation of research works influence and reach the conclusion: *research works focusing on a certain number of domains can produce significant impact.*

Side Projects

- **Acemap:** *Academic Map System* *Jun. 2015-Present*
  - Develop visualizing applications for scholarly information networks and presentation approaches.
  - Implement the recommending algorithm for papers in Acemap, and present the result on website.
  - Build and maintain the server and the back-end for Acemap.
- **Paper-forest Map:** *Graphic Tracker for Scholar's Publications* *Sept. 2017*
  - One of the visualization applications in Acemap, which aims to provide users with direct access of connections between one scholar's publications.
- **Linux Kernel Applications Development** *Spring 2016*
  - Get understanding of how operating system works by developing Linux Kernel applications.
  - Score 99/100, Rank 2/141
- **CPU Design on MIPS Architecture in Verilog** *Spring 2016*
  - Build a simple pipelining CPU by Verilog coding under MIPS architecture.
  - Score 98/100, Rank 1/137
- **Visualization for Machine Vision Understanding** *Fall 2016*
  - Implements idea of paper "*Shallow and Deep Convolutional Networks for Saliency Prediction*" to make a Saliency Prediction GUI, which helps people get better understanding of how Saliency Detection works under CNN framework.
  - Score 99/100, Rank 2/89
- **Using ConvNets to Recognize Captcha Digits** *Fall 2016*
  - Implements idea of paper "*Convolutional Neural Networks Applied to House Numbers Digit Classification*" to make a Captcha Digits recognizing GUI.
  - Score 99/100, Rank 1/180

Selected Scholarship & Honors

- **China National Scholarship** *highest honor for undergraduates in China, top 0.2% nationwide* *2015 & 2017*
- **Junzheng Scholarship** *award for excellent research performance, top 30 in SJTU* *2017*
- **Scholarship of Outstanding Undergraduates** *award for excellent research performance, top 2 in SEIEE* *2017*
- **Zhiyuan Honor Scholarship** *award for excellent academic performance* *each possible academic year*
- **Merit Student of Shanghai Jiao Tong University** *award for superior comprehensive performance* *2015*

Teaching Experience

- **Teaching Assistant for CS 499** *Mathematical Foundations of Computer Science* *Spring 2017*
- **Teaching Assistant for CS 334** *Computer Organization Lab* *Spring 2016*