北京大学前沿计算研究中心
Center on Frontiers of Computing Studies, Peking University

NEWSLETTER

Founded in December 2017, the **Center on Frontiers of Computing Studies** (CFCS), Peking University (PKU), China, is a university new initiative co-founded by Professors John Hopcroft (Turing Awardee) and Wen Gao (CAE, ACM/IEEE Fellow). The center aims at developing the excellence on two fronts: research and education. On the research front, the center will provide a world-class research environment, where innovation and impactful research is the central aim, measured by professional reputation among world scholars, not by counting the number of publications and research funding. On the education front, the center deeply involves in the Turing Class, an elite undergraduate program that draws the cream of the crop from the PKU undergraduate talent pool. New curriculum and pedagogy are designed and practiced in this program, with the aim to cultivate a new generation of computer scientists/engineers that are solid in both theories and practices.

We invite you to explore some of the highlights of the center from the past year in this newsletter.

CFCS Youth Forum on Frontiers of Computing

1st on April 2, 2018 at PKU, and 2nd on October 20, 2018, PKU CFCS

With the aim of attracting talented young scientists from various areas of Computer Science to the center, we start to host the CFCS Youth Forum on Frontiers of Computing twice a year. We invite candidates to give talks to introduce their research during the forum, and take the opportunity to introduce the center to them. With an ever increasing dynamic in the Chinese IT industry and partnership with universities, we also invite industry leaders to explore collaboration opportunities.

On April 2, 2018, 9 Ph.D/Ph.D candidates from world's top universities presented their research works during the 1st forum. Around 50 faculties and students from universities and researchers from top IT industries in China attended the forum. Professor John Hopcroft and Professor Wen Gao welcomed everyone during the opening session on behalf of the center. On October 20, 2018, we organized the 2nd forum and hosted 11 speakers.

The two forums featured young researchers from universities around the world, including MIT, CMU, UC Berkeley, Johns Hopkins University, Weizmann Institute of Science, etc., with research in various areas, including computer theories, machine learning, computer vision, etc.

SAGT 2018

September 11-13, 2018, Peking University

The Center hosted the 11th International Symposium on Algorithmic Game Theory (SAGT). The purpose of SAGT is to bring together researchers from Computer Science, Economics, Mathematics, Psychology, Physics, and Biology to present and discuss original research at the intersection of Algorithms and Game Theory. Keynote speakers include Turing Awardee Professor Silvio Micali from MIT, and Professor Andy Yao from Tsinghua University. Over 100 participants attended the symposium.

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New Faculty Member

We welcome Dr. Yuqing Kong to join the center in September 2018.

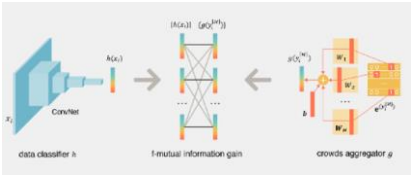
Dr. Kong obtained her Ph.D. degree from the Computer Science and Engineering Department at University of Michigan in 2018 and Bachelor degree in Mathematics from University of Science and Technology of China in 2013. She was one of the speakers of the 1st CFCS Youth Forum.

Dr. Kong's research interests lie in the intersection of theoretical computer science and the areas of economics: information elicitation/evaluation, prediction markets, mechanism design, and the future applications of these areas to crowdsourcing and machine learning.

Research Highlights of Turing Class Students

Max-MIG: an Information Theoretic Approach for Joint Learning from Crowds

Peng Cao, Yilun Xu*, Yuqing Kong, and Yizhou Wang*

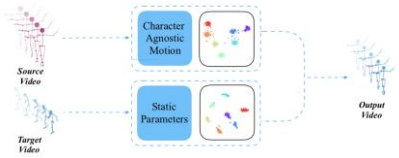


Abstract: We develop an information theoretic approach, Max-MIG, for joint learning from crowds. The Max-MIG maximizes the f-mutual information of a data classifier and a crowds aggregator under the co-training framework. Experiments show that our algorithm achieves the new state-of-the-art results in most settings, including the real-world data, and is robust to various information structures.

This work is completed by two Turing Class students under the supervision of Dr. Yuqing Kong and Prof. Yizhou Wang from CFCS. It has been accepted by ICLR 2019. More info: https://openreview.net/forum?id=HkgYmhR9KX

Learning Character-Agnostic Motion for Motion Retargeting in 2D

Kfir Aberman, Rundi Wu*, Dani Lischinski, Baoquan Chen, and Daniel Cohen-Or*



Abstract: In this work, we present a new method for retargeting video-captured motion between different human performers, bypassing 3D reconstruction. To achieve this, we learn to extract, directly from a video, a high-level latent motion representation, which is invariant to the skeleton geometry and the camera view.

This work is completed by a Turing Class student under the supervision of Professor Baoquan Chen from CFCS and is currently under submission.

Securely Trading Unverifiable Information without Trust

Yuqing Kong, Yiping Ma, and Yifan Wu

Abstract: In an unverifiable information trade scenario, we design a trust-free, truthful, and secure protocol, Smart Info-Dealer (SMind), for information trading, by borrowing three cutting-edge tools that include peer prediction, secure multi-party computation, and smart contract. With SMind, without a trusted center, a seller with high-quality information is able to sell her information securely at a fair price and those with low-quality information cannot earn extra money with poor information or steal information from other sellers. We believe SMind will help describe a free and secure information trade scenario in future.

This work is completed by two Turing Class students under the supervision of Dr. Yuqing Kong from CFCS and is currently under submission.

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