ERZHUO SHAO

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EDUCATION

Johns Hopkins University — Maryland, US
M.S.E. in Department of Biomedical Engineering — Sep 2021 - Present
Tsinghua University — Beijing, China
MPill. in Department of Electronic Engineering — Sep 2020 - Present
- GPA: 3.8

Tsinghua University — Beijing, China
B.Eng. in Department of Electronic Engineering — Sep 2016 - Jun 2020

PUBLICATIONS

Erzhuo Shao*, J. Feng*, T. Xia, Y. Li. One-shot Transfer Learning for Population Mapping, ***in CIKM 2021.***
Erzhuo Shao, H. Wang, J. Feng, T. Xia, H. Yang, L. Geng, D. Jin and Y. Li. Intention-aware Fine Grained Crowd Flow Generation via Deep Neural Networks, ***in TKDE.***
Erzhuo Shao, S. Guo and Z. Pardos. Degree Planning with PLAN-BERT: Multi-Semester Recommendation Using Future Courses of Interest, ***in AAAI.***

RESEARCH EXPERIENCE

Future Communication & Internet Lab, Department of Electronic Engineering, Tsinghua University
Associate Professor Yong Li — Sep 2017 - Present

Epidemic Containment under Return & Exploration Dichotomy

Erzhuo Shao, F. Xu and Y. Li.

- We aimed to minimize the social cost to of epidemic containment measures by analyzing the correlation between urban individual mobility and epidemic risk. After characterizing contact networks under the hub-periphery view, community structure, and return-exploration dichotomy, we found that the concentration of return movements is the origin of the community structure of contact network, while exploration movements were the constructor of bridges between communities.
- With individual-level SEIR simulation, we proposed a soft lockdown measure (exploration restriction), which had higher containment effect with less economic cost.
- Contact networks would be dominated by hub-hub internal connections under exploration restriction policy. That would significantly amplify the relative effect of hub-prioritized vaccine distribution policy.

[CIKM 2021] One-shot Transfer Learning for Population Mapping

Erzhuo Shao*, J. Feng*, Y. Wang, T. Xia and Y. Li.

- We were the first to research population mapping problem in one-shot transferring scenario, which aimed to infer fine-grained population distribution based on coarse-grained distribution.
- We designed an advanced transfer learning model, PSRNet, including spatiotemporal modeling, GAN-based data augmentation, and adversarial domain adaptation, to tackle the problem of one-shot transfer learning.
- Extensive experiments including cross-cities knowledge transferring and cross-granularities transferring scenarios showed that PSRNet could reduce the inference error for at least 25%.

[TKDE] Intention-aware Fine Grained Crowd Flow Generation via Deep Neural Networks

Erzhuo Shao, H. Wang, J. Feng, T. Xia, H. Yang, L. Geng, D. Jin and Y. Li.

- We aimed to generate intention-aware crowd flow based on static Point of Interest (POIs) distribution data and developed an effective deep neural network with multi-task training to model the relationship between static POI distribution, dynamic intention-aware crowd flow, and check-in distribution.

Computational Approaches to Human Learning (CAHL) lab, UC Berkeley School of Information
Associate Professor Zachary A. Pardos — June 2019 – June 2021

[AAAI 2021] Degree Planning with PLAN-BERT: Multi-Semester Recommendation Using Future Courses of Interest

Erzhuo Shao, S. Guo and Z. Pardos.

- We develoepd a Transformer-based recommender system for schedule planning assistance. We were the first to research the consecutive basket recommendation problem with pre-selected future reference items.

- To mitigate the "cold start problem" for Freshmen student, we introduced pre-selected courses as an additional feature. Experiments shows that 2 pre-selected courses could improve the recall of recommendation for Freshmen by 120%
- Research the effect of user and item features in self-attention contextual embedding architecture.
- The recommender system is already deployed to serve student in Berkeley. Installable package is published via pypi.

ADDITIONAL INFORMATION

- Familiar with mainstream deep learning frameworks (PyTorch, Tensorflow, and Keras), Spark/Hadoop-based distributional data processing system, and network analysis.