Shuhao Chang

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RESEARCH INTEREST

Machine Learning, Data mining, Computer Vision

ACADEMIC EXPERIENCE

08. 2015 – present   **Senior Student in Electronic Information Science and Technology, Tsinghua University(THU),** China
- Overall GPA 3.66/4.0
- TOFEL iBT 108/120 (R29, L28, S23, W28), Sept. 2018
- GRE V151, Q170, AW4.0

06. 2018 – 09.2018   **Summer Session, University of Wisconsin-Madison, Madison, U.S.A**
- GPA 4.0/4.0

PUBLICATIONS

[1]   **Shuhao Chang,** Xi Chen, Menglu Wang; '*An Efficient Algorithm for Refining Position and Velocity Outputs of Space-borne GNSS Receivers*', ChinaCom 2017: Communications and Networking pp 332-340

[2]   Fengli Xu, Zhen Tu, Hongjia Huang, **Shuhao Chang,** Yong Li; '*No More than What I Post: Preventing Linkage Attacks on Check-in Services*', The Web Conference 2019 (submitted)

RESEARCH EXPERIENCE

07.2018 – present   **Project: Robust traffic sign detection with Lidar and YOLO**   WI, USA
Electrical and Computer Engineering, UW-Madison, **Advisor:** *Assoc. Prof. Kassem Fawaz,*
- Aimed to achieve robust and accuracy road sign detection under adversarial attacks by involving depth and reflection values, color proportions, physical locations of traffic signs.
- Trained darkflow models to detect different shapes of road signs in lidar depth and reflection images. Collected color proportions with image processing methods(opencv).
- Reached the recognition accuracy of lidar image to 90%

09.2018 – present   **Project: Citywide Spatial-Temporal Crowd Flow Transfer Prediction**   Beijing, China
*The Future Internet & Communication Lab (FIB)***,** *THU;* **Advisor:** *Assoc. Prof. Yong Li*
- Aimed to apply transfer learning to crowd flow trend prediction between a source city and a target city so as to overcome the lack of data for the target city.
- Built up an adversarial-based Neural Network with Keras and have successfully achieved domain adaptation on two different datasets.

09.2017 – 10.2018   **Project: Privacy-preserving data publishing (PPDP) solutions beyond k-anonymity**   Beijing, China
*The Future Internet & Communication Lab (FIB)***,** *THU;* **Advisor:** *Assoc. Prof. Yong Li*
- Aimed to propose solutions to enhance the availability of publishing data without divulging privacy.
- Built up an attacker model and used data-driven methods to analyze a dataset with more than 200,000 users. Do well in data visualization.
- Proposed a partition-and-group algorithm with teammates and achieved k-anonymity and l-diversity privacy degree and significantly improved the availability of dataset.
- Submitted our paper to WWW 2019.

09.2016 - 10, 2017   **Project: Space-borne navigational positioning based on receding horizon filtering**   Beijing, China
*The Tsinghua Space Center***,** **Advisor:** *Assoc. Prof. Xi Chen*
- Proposed an efficient algorithm jointly using weighted Runge-Kutta integration and cubic Hermite polynomial interpolation for refining position and velocity outputs of space borne GNSS receivers.
- Verified the effect with simulations acted on real in-orbit satellite data of GRACE-B and LING QIAO
- Effectively eliminated outliers and significantly reduced the root mean square error of GNSS position and velocity outputs.
- Published our result on ChinaCom 2017; Link: https://link.springer.com/chapter/10.1007/978-3-319-78130-3_34

SELECTED COURSEWORKS

09.2018 – present   **Project: New York Taxi Fare Prediction**
Course project for 'Exploratory Data Analysis'
- Select this project among challenging competitions on Kaggle
- Make an EDA on New York taxi records from 2009 to 2015. Use seaborn and Bokeh to visualize
- Use Inception model and random forest to predict taxi fare amount and reduce the RMSE to $2.14

01.2018 – 02.2018   **Project: Gaussian Noise Passing Convolutional Neural Networks（CNN）**

Course project for 'Stochastic Processes'

- ➢ Studied the characteristics of Gaussian noise when propagating in convolutional neural networks.
- ➢ Theoretical analysis: Derived statistical properties of Gaussian noise when passing different layers.
- ➢ Practical experiment: Conducted simulations and experiments on CIFAR-10 dataset with VGG16.

10.2017 – 12.2017   **Project: Cross-Modal Matching of Audio and Visual Information**

Course project for 'Introduction to Visual-Auditory Information System'

- ➢ Aimed to match audio segments with silent videos automatically with deep learning methods.
- ➢ Reached a high matching accuracy of 90 percent, which is the top 5 result among all groups.

CAPSTONE PROJECT

09.2018 – present   **Project: Internet Metadata Analysis and Modeling**

Information and Network Engineering Research Center, *THU;* **Advisor:** *Prof. Xing Li*

- ➢ IPv6 addresses visualization with Netflow records

HIGHLIGHT of SKILLS

Programming: C\C++, Python, Matlab, MIPS, SQL, HTML, etc.

Professional skills: Tensorflow, Pytorch, Keras, Hadoop, scikit-learn, etc.

AWARDS AND HONORS

2018	Scholarship for comprehensive excellence of Tsinghua University *(top 5%)*
2017	Outstanding student backbone honor of Tsinghua University *(top 2%)*
2017	Scholarship for academic excellence of Tsinghua University *(top 20%)*
2016	Scholarship for comprehensive excellence of Tsinghua University *(top 5%)*
2016	Social contribution scholarship and Outstanding public welfare honor *(top 5%)*
2015	Perfect level in 'Leading Plan' of Tsinghua University *(top 2%)*

EXTRA-CURRICULUM ACTIVITIES

06.2017 - present   **Student Union of Tsinghua EE Dept.**

- ➢ President of Public Affair, organized various activities and raised nearly 15,000 USD as sponsorship