Jingkang Wang

https://wangjksjtu.github.io

Email : wangjksjtu_01@sjtu.edu.cn

Mobile : +86-158-2117-0337

EDUCATION

- **Shanghai Jiao Tong University (SJTU)**   Shanghai, China
  B.E. in Information Security, School of Cyber Security   *Sept. 2015 – June. 2019 (Expected)*
  - **GPA**: 3.96/4.3 (91.6/100)   **Rank**: 2/98
  - **TOEFL**: R27, L27, S20, W28, Total 102   **GRE**: V145, Q170, AW4.0

PUBLICATIONS

- **LiDAR-Video Driving Dataset: Learning Driving Policies Effectively.**
  Jingkang Wang*, Chenyi Ping*, Jonathan Li, Cewu Lu, Zhipeng Luo, Han Xue and Cheng Wang.
  In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- **Data Mining and Password Generation Based on Large-Scale Real Plain Passwords. (Chinese)**
  Jingkang Wang, Yutao Luo, Hao zhou, Bo wang and Gongshen Liu.
  In Proceedings of CCF Conference on Computer Networks and Information Security (CCNIS), 2018
- **Overview of Plaintext Password Generation Models. (Chinese)**
  Hao zhou, **Jingkang Wang**, Bo wang, Yutao Luo and Gongshen Liu.
  In CCF Transaction on Computer Engineering and Applications, 2018

SUBMISSIONS & PRE-PRINT ARTICLES

- **Reinforcement Learning with Noisy Rewards**
  Jingkang Wang, Yang Liu and Bo Li.
  In Submission to 7th International Conference on Learning Representations (ICLR), 2019
- **One Bit Matters: Understanding Adversarial Examples as the Abuse of Data Redundancies.**
  Bo Li, Gerald Friedland, **Jingkang Wang**, Ruoxi Jia, Costas J. Spanos and Dawn Song.
  In Submission to 7th International Conference on Learning Representations (ICLR), 2019
- **The Helmholtz Method: Using Perceptual Compression to Reduce Machine Learning Complexity.**
  Gerald Friedland, **Jingkang Wang**, Ruoxi Jia, Bo Li and Dawn Song.
  In Submission to 31st AAAI Conference on Artificial Intelligence (AAAI), 2019   (*arXiv:1807.10569*)
- **Multiple Character Embeddings for Chinese Word Segmentation.**
  Jingkang Wang, Jianing Zhou and Gongshen Liu.
  In Submission to 31st AAAI Conference on Artificial Intelligence (AAAI), 2019   (*arXiv:1808.04963*)

RESEARCH PROJECTS

- **Reinforcement Learning with Noisy Rewards**   *July 2018 - Sept. 2018*
  - Introduce an unbiased estimator of reward in reinforcement learning which guarantees risk minimization without any assumptions on the true distribution.
  - Propose an efficient iterative algorithm for estimating the confusion matrices of corrupted rewards in the training.
  - Study the convergence and finite sample complexity theoretically under the proposed reward proxy.
- **Understanding Adversarial Examples as the Abuse of Data Redundancies**   *March 2018 - May. 2018*
  - Propose a model for adversarial examples consistent with related work, physics and information theory.
  - Prove that input redundancy is indeed a necessary condition for being able to generating adversarial examples.
  - Validate that adversarial examples are indeed overflowing perceptrons trained on a certain level of redundancy.
- **Multiple Embeddings for Chinese Word Segmentation**   *Feb. 2017 - May. 2018*
  - Leverage both semantic and phonetic meanings of Chinese characters in NLP tasks by introducing *Pinyin Romanization* and *Wubi Input* Embeddings.
  - Achieve the state-of-the-art performance in AS and CityU corpora with F1 scores 96.9 and 97.3.
- **Reinterpreting Helmholtz Free Energy in Machine Learning**   *March 2018 - June. 2018*
  - Propose to reinterpret the Helmholtz free energy formula to explain the relationship between content and noise for sensor-based data.
  - Demonstrate this relationship can be observed as predicted in machine learning experiments on diverse datasets.
  - Verify our noise quantification method can be used to speed up the training of deep learning classifiers significantly while maintaining, or sometimes even improving, overall classification accuracy.
- **Benchmark for Driving Policy Learning**   *Apr. 2017 - Feb. 2018*
  - Propose a dataset which is the first policy learning benchmark composed of driving videos, LiDAR data and corresponding driving behaviors.
  - Conduct complete analysis on how important depth information is, how to leverage depth information and what we can achieve by utilizing current techniques.

Research Experiences

- **Machine Vision and Intelligence Group (MVIG)** Shanghai, China
  Undergraduate Researcher *Apr. 2017 - Present*
  - **Advisor**: Professor Cewu Lu
  - **Research Focus**: Computer Vision, Deep Learning, Autonomous Driving

- **University of California, Berkeley** Shanghai, China
  Research Intern (Remotely) *March 2018 - Oct. 2018*
  - **Advisor**: Professor Bo Li and Dawn Song
  - **Research Focus**: Secure AI, Reinforcement Learning

- **Shanghai Key Laboratory of Integrated Technology** Shanghai, China
  Research Assistant (National Security Competition Targeted) *May 2017/18 - July 2017/18*
  - **Advisor**: Professor Lei Fan
  - **Research Focus**: Blockchain, Privacy Preserving, Searchable Encryption

- **National Engineering Lab for Information Context Analysis Technology** Shanghai, China
  Research Assistant (Undergraduate Research Program in College) *Jan. 2017 - Sept. 2017*
  - **Advisor**: Professor Gongshen Liu
  - **Research Focus**: Data mining, Password Generation, Natural Language Processing

Honors & Awards

- **National Scholarships (top 2%)** *2016, 2017*
- **Level-A SJTU Outstanding Scholarships (1st in each major)** *2016, 2017*
- **First Prize in National College Students Information Security Competition (1st in Shanghai)** *2018*
- **Meritorious Winner Prize of Mathematical Contest in Modeling** *2018*
- **Second Prize in National College Students Information Security Competition** *2017*
- **Second Prize in The Chinese Mathematics Competitions** *2017*
- **SJTU Merit Students** *2016, 2017*
- **SJTU Excellent League Cadres** *2016, 2017*
- **First Prize in National Mathematical Olympiad in Senior (10th in Shanxi)** *2014*