

# PENG WANG

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## EDUCATION

### University of Virginia

*Master of Science in Computer Science (GPA: 3.838 / 4.00)*

**Charlottesville, VA**

*Aug. 2019 - Dec. 2021*

- Machine Learning, Information Retrieval, Vision and Language, Natural Language Processing, Reinforcement Learning, Graph Mining, Database Systems, Algorithms, Autonomous Mobile Robots

### Tsinghua University

*Bachelor of Engineering in Computer Science and Technology (Major GPA: 3.34 / 4.00)*

**Beijing, China**

*Sept. 2014 - Jun. 2018*

- Computer Language and Programming, Data Structures, Object Oriented Programming, Software Engineering

## SKILLS

- Programming Languages: Adept at Python, C/C++, familiar with Linux, Java, R, SQL
- Machine Learning: Adept at PyTorch, familiar with TensorFlow
- Algorithms: Deep Reinforcement Learning (DQN, DDQN, A3C), Recommendation System, NLP (RNN, LSTM, Pretrained Models (e.g., BERT, GPT))

## WORK EXPERIENCE

### China Justice Big Data Institute Co. Ltd.

*Machine Learning Intern, Research and Development Center*

**Beijing, China**

*Mar. 2019 - Jul. 2019*

- Developed data relation view and implemented data masking algorithms for over 8 million justice data records in order to locate information belonging to specific entity among hundreds of MySQL tables and prevent personal information from being leaked.
- Implemented deep learning Optical Character Recognition algorithms based on EAST, CTPN and CRNN to detect and recognize subtitles from videos and reached an accuracy of 0.8 with a speed of 25 fps.

## COMPETITION

### DeeCamp 2019, Sinovation Ventures

*Awarded 1<sup>st</sup> Prize among all 56 teams, total acceptance rate is 6% (nearly 10,000 candidates)*

**Beijing, China**

*Jul. 2019 - Aug. 2019*

- Designed and implemented an AI agent for Chinese Poker game 'Fight the Landlord' by combining several methods including Monte-Carlo tree search, deep learning and reinforcement learning models.
- Designed and implemented a novel CNN-based network to imitate human's behavior of playing cards by using the structure of Siamese Neural Network, a ResNet backbone and pairwise learning to rank method RankSVM.

## TECHNICAL RESEARCH

### Explainable Recommendation

*Research Assistant, Directed by Prof. Hongning Wang, University of Virginia*

**Charlottesville, USA**

*Sep. 2020 - Present*

- Reimplemented baseline models including NRT and Att2Seq and evaluated them on datasets including Yelp and TripAdvisor.
- Proposed to use graph structure to model the relationship between user, item, features and candidate explanations.
- Leveraging on Graph Attention Network to predict the relevance score of each candidate sentences to form explanations.
- Working on using ILP and RL methods for re-ranking to form highly relevant and informative personalized explanations.
- Proposed to leverage the text generation ability of recent pretrained models and used GPT-2 to generate reviews conditioned on user/item keywords profiles which are extracted from the real reviews using metrics including tf-idf.
- Working on using RL method to align the keywords during text generation procedure.

### Continual Reinforcement Learning

*Research Assistant, Directed by Prof. Yan Liu, University of Southern California*

**Los Angeles, USA**

*Jul. 2018 - Oct. 2018*

- Designed a novel neural network structure substitute for current Deep Q-learning's network to achieve continual RL.
- Created a baseline project containing DQN, Double DQN, Duel DQN and Prioritized Experience Replay on Atari games.
- Implemented various unsupervised representation learning methods to improve the training speed of current DQN method.

### Cyberspace Situation Awareness using Machine Learning Methods

*Research Assistant, Directed by Prof. Lucas Hui, University of Hong Kong*

**Hong Kong, China**

*Jul. 2017 - Aug. 2017*

- Wrote a technical survey report on the Internet of Things security ecosystem; used text mining to extract research hotspots.
- Implemented traditional classifiers to detect network attacking behaviors on KDD 99 and CAIDA DDoS dataset.
- Proposed to use graph model to represent network topological structure and leveraged on OddBall to predict outlier nodes.
- Built a hybrid classifier which combined outlier scores computed by OddBall on each node with the origin node features and promoted traditional classifiers' performance on network intrusion detection task.

## PUBLICATION

**Peng Wang**, Renqin Cai, Hongning Wang, "Graph-based Extractive Explainer for Recommendations", WWW 2022