# Chuanhao Li

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**RESEARCH INTERESTS**

I am broadly interested in machine learning methods and their applications to information retrieval and data mining. My current research focus is on multi-agent contextual bandit algorithms, with provable performance guarantee under complex environment (e.g., heterogeneity, non-stationarity, and limited communication).

**EDUCATION**

**University of Virginia (UVA)**, Charlottesville, VA — 08/2018 - Present
*Ph.D. in Computer Science* — GPA: 3.967/4.0
Advisor: Hongning Wang
Research: multi-agent bandit learning with application to recommender systems

**Harbin Institute of Technology (HIT)**, Harbin, China — 08/2016 - 06/2018
*M.S. in Mechatronics Engineering* — GPA: 86.00/100
Advisor: Gaoliang Peng
Research: deep learning methods for vibration signal based machine health monitoring and RGBD image based robot grasp planning

**Harbin Institute of Technology**, Harbin, China — 08/2012 - 06/2016
*B.S. in Mechanical Engineering* — GPA: 83.51/100
*B.A. in English* — GPA: 92.86/100

**Monash University**, Melbourne, Australia — 03/2015 - 07/2015
*Exchange Student* — GPA: 3.5/4.0

**EXPERIENCE**

**Department of Computer Science, UVA** — 08/2018 - Present
*Research Assistant*
Focus: multi-agent bandit learning with application to recommender systems
Description: I designed and analyzed algorithms for multi-agent bandit learning problems that consider heterogeneous and dynamic user preferences, and communication efficiency under distributed setting.
Mentor: Hongning Wang

**Walmart Labs** (remotely), Sunnyvale, CA — 06/2020 - 08/2020
*Research Intern*
Focus: online grocery user sequential modeling
Description: I built a self-attention model for personalized next-basket (a set of items) recommendation given a sequence of baskets in user history data.
Mentors: Bo Meng, Peng Yang

**School of Mechatronics Engineering, HIT** — 08/2016 - 06/2018
*Research Assistant*
Focus: deep learning methods for machine health monitoring
Description: I built convolutional neural network models to predict the health condition and detect possible damage of machines based on vibration signals.
Mentor: Gaoliang Peng

**General Motors China Science Lab**, Shanghai, China 06/2017 - 08/2017
*Research Intern*
Focus: road scene segmentation for self-driving cars
Description: I built a deep neural network model for the instance-segmentation of road scene images, i.e., output class, bounding box, and segmentation mask for objects.
Mentors: Xiaowen Dai, Jiangling Du

## PUBLICATIONS

[1] Fan Yao, **Chuanhao Li**, Denis Nekipelov, Hongning Wang, and Haifeng Xu, Learning the Optimal Recommendation from Explorative Users, Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI), 2022.

[2] **Chuanhao Li** and Hongning Wang, Asynchronous Upper Confidence Bound Algorithms for Federated Linear Bandits, arXiv preprint arXiv:2110.01463, 2021.

[3] Huazheng Wang, Haifeng Xu, **Chuanhao Li**, Zhiyuan Liu, and Hongning Wang, Incentivizing Exploration in Linear Bandits under Information Gap, arXiv preprint arXiv:2104.03860, 2021.

[4] **Chuanhao Li**, Qingyun Wu, and Hongning Wang, When and Whom to Collaborate with in a Changing Environment: A Collaborative Dynamic Bandit Solution, in Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR), 2021.

[5] **Chuanhao Li**, Qingyun Wu, and Hongning Wang, Unifying Clustered and Non-stationary Bandits, in International Conference on Artificial Intelligence and Statistics (AISTATS), 2021.

[6] Wei Zhang, **Chuanhao Li**, Gaoliang Peng, Yuanhang Chen, and Zhujun Zhang, A deep convolutional neural network with new training methods for bearing fault diagnosis under noisy environment and different working load, Mechanical Systems and Signal Processing, 100, 439-453, 2018.

[7] Yuanhang Chen, Gaoliang Peng, Chaohao Xie, Wei Zhang, **Chuanhao Li**, and Shaohui Liu, ACDIN: Bridging the gap between artificial and real bearing damages for bearing fault diagnosis, Neurocomputing, 294, 61-71, 2018.

[8] **Chuanhao Li**, Wei Zhang, Gaoliang Peng, and Shaohui Liu, Bearing fault diagnosis using fully-connected winner-take-all autoencoder, IEEE Access, 6, 6103-6115, 2017.

[9] Wei Zhang, Gaoliang Peng, **Chuanhao Li**, Yuanhang Chen, and Zhujun Zhang, A new deep learning model for fault diagnosis with good anti-noise and domain adaptation ability on raw vibration signals, Sensors, 17, no. 2, 425, 2017.

[10] Wei Zhang, Gaoliang Peng, and **Chuanhao Li**, Bearings fault diagnosis based on convolutional neural networks with 2-D representation of vibration signals as input, in MATEC web of conferences, 2017.

[11] Wei Zhang, Gaoliang Peng, and **Chuanhao Li**, Rolling element bearings fault intelligent diagnosis based on convolutional neural networks using raw sensing signal, in Advances in Intelligent Information Hiding and Multimedia Signal Processing, 2017.

## ACADEMIC SERVICES

**Teaching Assistant**

- Reinforcement Learning (Grad) UVA, Fall 2020
- Software Analysis and Applications (Grad) UVA, Spring 2020
- Data Structures and Algorithms I (Undergrad) UVA, Fall 2019

**Conference Reviewer**

- WSDM 2021, KDD 2021, AAAI 2022, AISTATS 2022

**Journal Reviewer**

- IEEE Transactions on Systems, Man and Cybernetics: Systems

**Conference Volunteer**

- KDD 2020

## AWARDS

- Carlos and Esther Farrar Fellowship Award — UVA, 2021
- Academic Award for Grad Student — HIT, 2016
- Graduation with Distinction — HIT, 2016
- Outstanding Undergrad Thesis Award — HIT, 2016
- National Scholarship for Undergrad — Ministry of Education, China, 2015
- CSC Scholarship for Undergrad Exchange Program — China Scholarship Council, 2015