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Fanyou Wu

Applied Scientist II @ Amazon

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I am currently an Applied Scientist at Amazon PXT Center Science. My work and research focus on applying machine learning to the human resource field. Attending machine learning related competitions is my side interest, and I have won many championships and runners-up in machine learning related competitions and top conference competitions at KDD, IJCAI, NeurIPS, and CVPR.

Technical Experience

Applied Scientist II — **JAN 2023 — Present**
Amazon — *Seattle, WA*

- Apply machine learning to the human resource field.

Postdoc Researcher — **JAN 2022 — JAN 2023**
Purdue University — *West Lafayette, IN*

- Develop iOS App with ARKit and CoreML to estimate tree diameter, height, and species.
- Use the semantic segmentation method with PyTorch to estimate tree growth ring edges images with extremely noisy.

Machine Learning Engineer — **AUG 2017 — DEC 2017**
Envision Digital — *Shanghai, China*

- Use LightGBM to solve time series problems for better predict user demand of electricity.
- Learn to apply some machine learning models on IoT platforms based on Hadoop and Hive.

Selected Competition Experience with Cash Prize

Second Place in Amazon KDD CUP 2022 task 2 and task 3, 2000+2000 USD [*link*]

- Develop natural language processing (NLP) models to solve the e-commerce search problem.

Second Place in CVRP 2021 The 2nd Agriculture-Vision Prize Challenge, 3000+1200 USD [*link*]

- Develop semantic segmentation models for farmland prediction, involving distributed training and model ensemble.

Second Place in NeurIPS 2020 Traffic4cast Competition, 5000 USD [*link*]

- Use PyTorch to develop deep time spatial models for traffic map movies prediction.

First Place in KDD CUP 2020 Reinforcement Learning Competition Track (Reposition), 8000 USD [*link*]

- Use PyTorch and a self-developed simulator (in Julia) to solve vehicle repositioning problems based on Deep-Q Learning.

First Place in IJCAI-19 Alibaba Adversarial AI Challenge Competition (Traget Attack Track), 5000 USD [*link*]

- Use TensorFlow to perform adversarial attack based on a modification of Projection Gradients Descents.

*Check *my website* for full list. In total, I have won **more than 80000 USD** from machine learning competitions using varies frameworks and methods.

Education

Ph.D in Forestry, *Purdue University* — JAN 2018 — DEC 2021
M.S. in Wood Material, *University of Eastern Finland* — SEP 2015 — APR 2017
B.E in Wood Material, *Nanjing Forestry University* — SEP 2011 — JUN 2015
Exchange student in Wood Products Processing, *University of British Columbia* — AUG 2013 — MAY 2014

Selected Publications

- Liu, Y., Wang, K., **Wu, F.**, Liu, Z., & Qu, X. (2022). Representation, Learning and Inference for Real-world Delivery Route Optimization. Transportation Science. JCR:Q1 [*UnderReview*]
- Liu, Y., **Wu, F.**, Lyu, C., Liu, X., Li, S., Ye, J. & Qu, X. (2022). Deep Dispatching: A Deep Reinforcement Learning Approach for Vehicle Dispatching on Online Ride-hailing Platform. Transportation Research Part E: Logistics and Transportation Review. JCR:Q1 [*link*]
- **Wu, F.**, Gazo, R., Benes, B., & Haviarova, E. (2021). Deep BarkID - A Portable Tree Bark Identification System by Knowledge Distillation. European Journal of Forest Research. JCR:Q1 [*link*]
- **Wu, F.**, Gazo, R., Haviarova, E., & Benes, B. (2021). Wood identification based on longitudinal section images by using deep learning. Wood Science and Technology, 55(2), 553-563. JCR:Q1 [*link*]
  Liu, Y., **Wu, F.**, Lyu, C., Liu, X., & Liu, Z. (2021). Behavior2vector: Embedding Users' Personalized Travel Behavior to Vector. IEEE Transactions on Intelligent Transportation Systems. JCR:Q1 [*link*]
- **Wu, F.**, Gazo, R., Haviarova, E., & Benes, B. (2019). Efficient Project Gradient Descent for Ensemble Adversarial Attack. IJCAJ 19 workshop. [*link*]
- **Wu, F.**, & Kärenlampi, P.P. (2017). Phase Transition in A Growing Network. Journal of Complex Networks. [*link*]

*Check *Google Scholar* or *my website* for full list.