Yutian Pang

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Linkedin • Google Scholar • Github Repo

Summary

3rd year Ph.D. student at Arizona State University, focus on probabilistic machine learning and deep learning models with a special interest in Bayesian ml/dl. Proficient on Python with Tensorflow 1.× / 2.×, Tensorflow-probability, Torch, SciKit-Learn, Pandas, etc. Proficient with GPU clusters and Linux OS. Extensive coding/debugging experience with Python.

Experience

Prognostic Analysis and Reliability Assessment Lab — Arizona State University, Tempe, AZ

Research Associate — *Dec '2017 – present*

- Large scale (TBs) environmental data and air traffic surveillance data processing with Spark/GeoSpark.
- Deterministic/probabilistic aircraft trajectory prediction with NNs/BNNs.
- Deterministic/probabilistic abnormal flight event spatial-temporal prediction with AE/VAE.
- Macroscopic sequenced 2D traffic flow prediction with video next frame prediction framework Eidetic 3D-LSTM.
- Bayesian NN robustness analysis and discovery of potential malicious attack(white-box, black-box, input perturbation) on satellites image classification tasks.
- Spatial-Temporal Graph Transformer Networks for multi-Aircrafts collaborative trajectory prediction and separation violation safety assessment in the near-terminal airspace.
- Contributor of novel trajectory simulation software PARA-ATM.

Research Aide — *August '2017 – Dec '2017*

- Analytical raw implementation of Bayesian regression models.
- Raw implementation of decision trees based on Gini index.
- Raw implementation of CNN with numpy.
- Flight convective weather avoidance with vanilla CNN.
- Linux server/GPU cluster maintenance (ssh, bash, shell, CUDA/CuDNN for GPU training).

Education

Arizona State University — Tempe, AZ

PhD student in Mechanical Engineering — *2018 – current*

Overall GPA of **4.00/4.00**.
Finished courses such as Optimization, Statistical Machine Learning, Data Science and Decision Analysis, Large-scale Data Processing, Foundations of Algorithms, and Reinforcement Learning.

M.S. degree in Mechanical Engineering — *2016 – 2018*

Overall GPA of **3.87/4.00**.
Finished courses such as Deep Learning for Media Processing and Understanding, Statistical Machine Learning and Data Mining, Probabilistic Method for Engineering as well as courses like Computational Fluid Dynamics, Continuum Mechanics, Partial Differential Equations, Finite Elements in Engineering etc.
Member of Dean's list at Ira A. Fulton Schools of Engineering in 2017.

HuaZhong University of Science and Technology — China

Degree of Bachelor of Engineering – School of Mechanical Science and Engineering — *2013 – 2016*

Three years' undergraduate study there, built a great foundation for future research. Graduated with an overall GPA of 3.49/4.00. Won a scholar of good academic performance in the sophomore year.

Skills

- Programming: Python(Tensorflow, Torch, Edward, Pandas, Numpy, Sklearn, etc). MATLAB. R. Scala. G-code.
- Database: Apache Spark(GeoSpark). Python(Psycopg2, Pandas). PostgreSQL(PostGIS).
- Linux Administration Skills: Shell. Bash.
- Professional Writing: LaTeX.
- Natural languages: Mandarin Chinese *(Native or Bilingual Proficiency)*, English *(Full Professional Proficiency)*.
- Soft Skills: Presentation. Communication. TeamWork. Problem Solving. Self-Motivated. Life-Long Learning.

Conference Workshops

Pang, Y., Cheng, S., Hu, J., Liu, Y. (2021). Evaluating the Robustness of Bayesian Neural Networks Against Different Types of Attacks. In 2021 CVPR Workshops on Adversarial Machine Learning in Real-World Computer Vision Systems.

Conference Proceedings&Presentations

Pang, Y., Yao, H., Hu, J., Liu, Y. (2019). A Recurrent Neural Network Approach for Aircraft Trajectory Prediction with Weather Features From Sherlock. In AIAA Aviation 2019 Forum (p. 3413).

Pang, Y., Liu, Y. (2020). Conditional Generative Adversarial Networks (CGAN) for Aircraft Trajectory Prediction considering weather effects. In AIAA Scitech 2020 Forum (p. 1853).

Pang, Y., Wang, Y., Liu, Y. (2020). Probabilistic Aircraft Trajectory Prediction with Weather Uncertainties using Approximate Bayesian Variational Inference to Neural Networks. In AIAA AVIATION 2020 FORUM (p. 2897).

Pang, Y., Xu, N., Liu, Y. (2019, September). Aircraft trajectory prediction using LSTM neural network with embedded convolutional layer. In 11th Annual Conference of the Prognostics and Health Management Society, PHM 2019. Prognostics and Health Management Society.

Pang, Y., Liu, Y. (2020). Probabilistic Aircraft Trajectory Prediction Considering Weather Uncertainties Using Dropout As Bayesian Approximate Variational Inference. In AIAA Scitech 2020 Forum (p. 1413).

Wang, Y., Pang, Y., Liu, Y., Dutta, P., Yang, B. J. (2019). Aircraft Trajectory Prediction and Risk Assessment Using Bayesian Updating. In AIAA Aviation 2019 Forum (p. 2936).

Zhao, X., Yan, H., Li, J., Pang, Y., Liu, Y. (2019, September). Spatio-temporal Anomaly Detection, Diagnostics, and Prediction of the Air-traffic Trajectory Deviation using the Convective Weather. In Proceedings of the Annual Conference of the PHM Society (Vol. 11).

Journal Publications

Wang, Y., Pang, Y., Gorceski, S., Kostiuk, P., Mohen, M. T., Menon, P. K., Liu, Y. (2021). A Voice Communication-Augmented Simulation Framework for Aircraft Trajectory Simulation. IEEE Transactions on Intelligent Transportation Systems.

Wang, Y., Pang, Y., Chen, O., Iyer, H. N., Dutta, P., Menon, P. K., Liu, Y. (2021). Uncertainty quantification and reduction in aircraft trajectory prediction using Bayesian-Entropy information fusion. Reliability Engineering System Safety, 107650.