

高鹏至

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教育背景

伦斯勒理工学院, 美国

工学博士, 电子工程, 2013.8 - 2017.12

- 导师: 汪孟教授
- 博士论文: High-dimensional Data Analysis by Exploiting Low-dimensional Models with Applications in Synchrophasor Data Analysis in Power Systems

宾夕法尼亚大学, 美国

工学硕士, 电子工程, 2011.8 - 2013.5

西安电子科技大学, 中国

工学学士 (优秀毕业生), 电子信息工程, 2007.8 - 2011.5

研究方向

我的研究方向包括信号处理, 高维数据分析和机器学习。

工作经历

槃腾科技 | Petuum, 数据科学家

2018.2-至今

- 设计并开发用于 Petuum 人工智能开发平台的机器学习算法库 (基于 TensorFlow, Dynet 和 LightGBM)。
- 设计并开发基于 PyTorch 的机器学习与文本生成工具箱 Texar-PyTorch (<https://github.com/asym1/texar-pytorch>, 获得超过 480 stars)。开发并维护基于 TensorFlow 的机器学习与文本生成工具箱 Texar-TensorFlow (<https://github.com/asym1/texar>, 获得超过 1730 stars)。

微软亚洲研究院 | Microsoft Research Asia, 研究实习生

2010.12-2011.5

- 分析采集于 Intel-Berkeley 实验室的 54 个传感器的数据 (150MB), 并探究其时域关联性。提出并开发了一种用于无线传感器网络数据采集的联合来源网络编码机制。

技术能力

- 熟练: MATLAB, Python, Dynet, PyTorch, TensorFlow
- 有经验: Java, R, C/C++, C#, AMPL

获奖情况

- IBM Watson Build Challenge 北美决赛入围者 2017
- 论文被选为 runner-up of the Best Paper in Electric Energy Systems Track of Hawaii International Conference on System Sciences 2015
- Founders Award of Excellence (前 1%) 2015
- 论文被选为 one of the Best Conference Papers on Power System Analysis and Modeling of IEEE Power & Energy Society General Meeting 2014
- 西安电子科技大学优秀毕业生 (前 1%) 2011
- 国家奖学金 (前 1%) 2010
- 西安电子科技大学一等奖学金 (前 2%) 2008-2010
- 西安电子科技大学学习标兵 (前 1%) 2008

期刊论文

- P. Gao, R. Wang, and M. Wang. "Robust Matrix Completion by Exploiting Dynamic Low-dimensional Structures." *submitted to IEEE Transactions on Signal Processing*, 2019.
- P. Gao, R. Wang, M. Wang, and J. H. Chow. "Low-rank Matrix Recovery from Noisy, Quantized and Erroneous Measurements." *IEEE Transactions on Signal Processing*, 2018, 66 (11): 2918-2932.

- **P. Gao**, M. Wang, J. H. Chow, M. Berger, and L. M. Seversky. “Missing Data Recovery for High-dimensional Signals with Nonlinear Low-dimensional Structures.” *IEEE Transactions on Signal Processing*, 2017, 65 (20): 5421-5436.
- **P. Gao**, M. Wang, J. H. Chow, S. G. Ghiocel, B. Fardanesh, G. Stefopoulos, and M. P. Razanousky. “Identification of Successive “Unobservable” Cyber Data Attacks in Power Systems Through Matrix Decomposition.” *IEEE Transactions on Signal Processing*, 2016, 64 (21): 5557-5570.
- **P. Gao**, M. Wang, S. G. Ghiocel, J. H. Chow, B. Fardanesh, and G. Stefopoulos. “Missing Data Recovery by Exploiting Low-dimensionality in Power System Synchrophasor Measurements.” *IEEE Transactions on Power Systems*, 2016, 31 (2): 1006-1013.

会议论文

- M. Wang, J. H. Chow, Y. Hao, S. Zhang, W. Li, R. Wang, **P. Gao**, C. Lackner, E. Farantatos, and M. Patel. “A Low-rank Framework of PMU Data Recovery and Event Identification.” *submitted to the IEEE International Conference on Smart Grid Synchronized Measurements and Analytics (SGSMA)*, 2019.
- G. Mijolla, S. Konstantinou, **P. Gao**, J. H. Chow, and M. Wang. “An Evaluation of Low-Rank Matrix Completion Algorithms for Synchrophasor Missing Data Recovery.” *Proc. of the 20th Power Systems Computation Conference (PSCC)*, Dublin, Ireland, Jun. 2018.
- **P. Gao**, and M. Wang. “Dynamic Matrix Recovery from Partially Observed and Erroneous Measurements.” *Proc. of the International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Calgary, Canada, Apr. 2018.
- M. Wang, J. H. Chow, **P. Gao**, Y. Hao, W. Li, and R. Wang. “Recent Results of PMU Data Analytics by Exploiting Low-dimensional Structures.” *Proc. of the 10th Bulk Power Systems Dynamics and Control Symposium (IREP)*, Espinho, Portugal, Aug. 2017.
- **P. Gao**, R. Wang, and M. Wang. “Quantized Low-rank Matrix Recovery with Erroneous Measurements: Application to Data Privacy in Power Grids.” *Proc. of Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2016.
- **P. Gao**, M. Wang, and J. H. Chow. “Matrix Completion with Columns in Union and Sums of Subspaces.” *Proc. of IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Orlando, FL, Dec. 2015.
- M. Wang, J. H. Chow, **P. Gao**, X. T. Jiang, Y. Xia, S. G. Ghiocel, B. Fardanesh, G. Stefopoulos, Y. Kokai, N. Saito, and M. P. Razanousky. “A Low-Rank Matrix approach for the Analysis of Large Amounts of Synchrophasor Data.” *Proc. of Hawaii International Conference on System Sciences (Runner-up of Best Paper in Electric Energy Systems Track)*, Kauai, Hawaii, Jan. 2015.
- M. Wang, **P. Gao**, S. G. Ghiocel, J. H. Chow, B. Fardanesh, G. Stefopoulos, and M. P. Razanousky. “Identification of “Unobservable” Cyber Data Attacks on Power Grids.” *Proc. of IEEE SmartGridComm*, Venice, Italy, Nov. 2014.
- **P. Gao**, M. Wang, S. G. Ghiocel, and J. H. Chow. “Modeless Reconstruction of Missing Synchrophasor Measurements.” *Proc. of IEEE Power & Energy Society General Meeting (selected in Best Conference Paper sessions)*, Washington, DC, Jul. 2014.

技术报告

- Zecong Hu, **Pengzhi Gao**, Avinash Bukkittu, and Zhiting Hu. “Introducing Texar-PyTorch: An ML Library integrating the best of TensorFlow into PyTorch.” October, 2019.

专利

- Meng Wang, **Pengzhi Gao**, and Joe H. Chow. “A low-rank-based missing PMU data recovery method.” Application No.: 62/445305, Filed January 12, 2017.

研究经历

伦斯勒理工学院, 研究助理

2013.8-2017.12

- 分析同步相量测量单元 (PMU) 数据 (>200MB) 并探究数据的时域与空间域的关联性 (低维度特性)。
- 提出一种针对电网网络攻击的检测方法。用采集于纽约州中部电网的实际数据对我们的方法进行了测试。
- 开发了一种针对 PMU 数据的实时重构算法。在 OpenPDC 中用 C# 实现了相应的算法, 并将计算时间减少了 50%。

- 提出了一种描述非线性数据的模型。基于这个模型，开发了一种凸优化数据恢复算法。用 IEEE 39-bus New England Power System 的标准测试数据集对我们的方法进行了测试。
- 针对量化及部分受损的数据，提出了一种数据恢复算法。用采集于纽约州中部电网的实际数据对我们的方法进行了测试。

宾夕法尼亚大学, 研究助理

2012.5-2013.5

- 分析来自于 IEEG Portal 的 EEG 数据，并用于癫痫侦测任务。
- 提出一种针对于 EEG 数据的新字典，并将 EEG 数据恢复效果提升了 20%。

专业活动

- IEEE 学生会员, 2013 - 2017。IEEE 会员, 2018 - 至今。
- Center for Ultra-wide-area Resilient Electric Energy Transmission Networks (CURENT) 伦斯勒理工学院学生代表。
- 教学助理（伦斯勒理工学院）：
Modeling and Analysis of Uncertainty, 2017 年秋季学期,
Distributed Systems and Sensor Networks, 2017 年秋季学期。
- 程序委员会成员：
Conference on Uncertainty in Artificial Intelligence (UAI) 2018。
- 审稿人：
IEEE Transactions on Smart Grid,
IEEE Transactions on Automatic Control,
IEEE/ACM Transactions on Networking,
IEEE Signal Processing Letters,
Annals of Mathematics and Artificial Intelligence,
American Control Conference,
IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm),
International Symposium on Antennas and Propagation。