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Summary

I have 9-year experience in working in industry as well as in doing research in academia. I am good in Mathematics and in Programming. I am enthusiasm, quick leaner, hard working, and reponsible.

Education

Ph.D. Norwegian University of Science and Technology, Norway (expected)   2020

M.Sc. Computer Science, Hunan University, China   2016

B.S. Computer Science, Hanoi University of Technology, Vietnam   2004

Research Experience

Research Fellow, NTNU, Norway   2017 – Present

– Develop novel techniques and efficient algorithms for detecting events in various type of data. Results of my research are proposed algorithms and published papers in pioneer conferences and journals.

– We handle with various types of the big data, that arrive in a form of stream, and in a wide-range of applications, e.g. classification, change detection, fraud detection, attack network, and genetics applications. The outcome of my research is summarized as follows:

1. We optimize the memory usage, and propose a novel structure to avoid costly joins. Our method is 6 times lesser memory consumption, and 10 times faster than the state-of-the-art methods.

2. We study the temporal dependence of data, and propose novel algorithms for change detection. We propose auto-tuning learning models by projecting vector on a ℓ_1 space. Our method is the first rank among the compared methods.

3. We investigate the correlation between features of data in user activity behavior analysis in social networks with concept drift. We propose an evolving model that automatically updates its coefficients. Our proposed method is 3.99% more accurate in classification task, and the error rate is 12 times better than the state-of-the-art methods with concept drift.

4. We work with tensor, which is a core structure in most of the current machine learning library. We develop theoretical proofs for multiple dense subtensor detection with guarantee on the density. We propose a new technique to detect multiple dense subtensors with a higher lower bound density guarantee. Our method is more than two millions accurate on density and 6.9 times faster.

5. We propose novel proofs to provide a better guarantee for the dense subgraph and subtensor detection problem which have been utilized in tremendous works and applications such as fraud detection,

event detection, and genetics applications. Illustrated example and experiment show the efficiency and our method can guarantee the density more 70% than the state-of-the-art method.

– Programming Languages: Java, C++, MatLab, Python.

CSC Master in Computer Science, Hunan University, China   2014 – 2016

– Score 91.94/100. Taken courses are Algorithm Analysis and Design, Discrete Mathematics, Intelligent Optimization Algorithm, Advanced Artificial Intelligence, Program Language, Advanced Computer Organization, Advanced Data structure and Algorithm.

– Propose a novel coverage concept, and develop a method for quickly raising the lower bound value to prune the search space. We develop new efficient algorithm for mining top-k high utility itemsets, our proposed algorithm outperforms the state-of-the-art methods.

Industry Working Experience

Senior Software Engineer, MB Bank   2013 – 2014

– Develop enterprise applications (e.g. HR) and business processing management (BPM) (e.g. appraisal process, loan process) using software-AG product, service monitoring tool. Advising and fixing some vulnerabilities and flaws of applications and systems.

– Platform & Techniques: Web-Based Application & Services. Software-AG, SQL-Server, PHP, C-Sharp.

Solution Architect, Team Leader, VTCMobile   2011 – 2013

– Build Back-End framework and services for applications and games on mobile platform. Analyze and design databases and develop backends, restful services using C-Sharp, SQL-Server, NoSQL-MongoDB, OAuth.

Researcher, CDIT   2006 – 2011

– Propose solutions and develop applications for Vietnam Post.

– Platform & Techniques: Window & Web Based Applications. VB.Net, C-Sharp, SQL-Server, Oracle.

Developer, Vinacomm   2004 – 2006

– Build content management system for news and financial (stock) service system. Build indicator, candle, pattern recognition and rebuild system with new technology, e.g. C-Sharp, NoSQL-Redis.

Outsource, Vingroup   2008 – 2011

– Build HR system, Booking online, Member Management System, Real Estate Management.

– Platform: Window & Web Based Applications, C-Sharp, DevExpress, SQL-Server.

Honors and Awards

1. National award in Mathematics for high school student   1999
2. Full CSC Scholarship for Master degree   2014 – 2016
3. Selected for Best Papers of the Industrial Conference on Data Mining Conference   2016
4. PhD Fellowship   2017–2021
5. SIGIR Student Travel Grant   2019

Research Interest

Data Mining, Algorithm Analysis, Optimization.

Machine Learning and Artificial Intelligent.

Selected Publications

My current H-Index is 7, for more details, please see my Google Scholar: `https://scholar.google.com/`

1. Dam, T.-L., Ramampiaro, H., Nørvåg, K. & **Duong, Quang-Huy**. Towards efficiently mining closed high utility itemsets from incremental databases. *Knowledge-Based Systems* **165,** 13–29 (2019).

2. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. *A Better Density Guarantee of Dense Subtensor and Dense Subgraph Detection* in *Submitted to WWW* (2019).

3. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. *Multiple Dense Subtensor Estimation with High Density Guarantee* in *Submitted to IEEE ICDE* (2019).

4. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. *Sketching Streaming Histogram Elements using Multiple Weighted Factors* in *The 28th ACM International Conference on Information and Knowledge Management, CIKM* (2019).

5. Fournier-Viger, P. *et al.* Discovering Periodic Itemsets Using Novel Periodicity Measures. *Advances in Electrical and Electronic Engineering* **17,** 33–44 (2019).

6. **Duong, Quang-Huy**, Fournier-Viger, P., Ramampiaro, H., Nørvåg, K. & Dam, T.-L. Efficient high utility itemset mining using buffered utility-lists. *Applied Intelligence* **48,** 1859–1877 (2018).

7. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. Applying temporal dependence to detect changes in streaming data. *Applied Intelligence* **48,** 4805–4823 (2018).

8. **Duong, Quang-Huy**, Ramampiaro, H., Nørvåg, K., Fournier-Viger, P. & Dam, T.-L. High utility drift detection in quantitative data streams. *Knowledge-Based Systems* **157,** 34–51 (2018).

9. Dam, T.-L., Li, K., Fournier-Viger, P. & **Duong, Quang-Huy**. An efficient algorithm for mining top-k on-shelf high utility itemsets. *Knowledge and Information Systems* **52,** 621–655 (2017).

10. Dam, T.-L., Li, K., Fournier-Viger, P. & **Duong, Quang-Huy**. CLS-Miner: efficient and effective closed high-utility itemset mining. *Frontiers of Computer Science*, 1–25 (2017).

11. Fournier-Viger, P. *et al.* PFPM: *discovering periodic frequent patterns with novel periodicity measures* in *Proceedings of the 2nd Czech-China Scientific Conference 2016* (2017).

12. Dam, T.-L., Li, K., Fournier-Viger, P. & **Duong, Quang-Huy**. An efficient algorithm for mining top-rank-k frequent patterns. *Applied Intelligence* **45,** 96–111 (2016).

13. **Duong, Quang-Huy**, Liao, B., Fournier-Viger, P. & Dam, T.-L. An efficient algorithm for mining the top-k high utility itemsets, using novel threshold raising and pruning strategies. *Knowledge-Based Systems* **104,** 106–122 (2016).

14. Fournier-Viger, P., Lin, J. C.-W., **Duong, Quang-Huy** & Dam, T.-L. *FHM + : Faster High-Utility Itemset Mining Using Length Upper-Bound Reduction* in *International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems* (2016), 115–127.

15. Fournier-Viger, P., Lin, J. C.-W., **Duong, Quang-Huy** & Dam, T.-L. *PHM: mining periodic high-utility itemsets* in *Industrial conference on data mining* (2016), 64–79.