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Summary

I have 10-year experience in working in industry and 6 years doing research in academia. I have background in Computer Science, and I am good at Mathematics and at Programming.

Education

Ph.D. in Computer Science, NTNU, Norway — Mar 2017 - Jun 2020 (expected)

M.Sc. in Computer Science, Hunan University, China — Sep 2014 - Nov 2016

B.S. in Computer Science, Hanoi University of Technology, Vietnam — Sep 1999 - Jun 2004

Work Experience

Research Fellow, NTNU, Norway **2017 – Present**

– I am a member of Data and Artificial Intelligence group, and working in the MUSED (MUlti-Source Event Detection) project at NTNU. The project handles big data streams in a wide-range of applications, e.g. classification, change detection, fraud detection, network attack, and genetics applications. I developed novel techniques and efficient algorithms for detecting events in various type of data. The short outcome of my work is summarized as follows:

1. Optimize the memory usage, and propose a novel structure to avoid costly joins in mining high profit product groups. The method is ***6 times lesser memory consumption***, and ***10 times faster*** than the state-of-the-art methods.
2. Analyze the user activity behavior in social networks. I propose an evolving model to quickly adapt with the changes in user behaviors, which is more accurate in classification. The proposed method is 3.99% more accurate in classification task, and the error rate is ***12 times better*** than the existing methods (ACM CIKM 2019).
3. Develop theoretical proofs for multiple dense subtensor detection with guarantee on the density. Propose a new technique to detect ***multiple dense subtensors*** with a higher lower bound density guarantee. The method is ***two million times more accurate*** on density and ***6.9 times faster*** (IEEE ICDE 2020).

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

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

– Score 91.94/100, excellent. 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.

– Proposed a method for quickly raising the lower bound value to prune the search space in mining top-k high utility itemsets. Our method outperforms the state-of-the-art methods (*Knowledge-Based System*).

Industry Working Experience

Senior Software Engineer, MB Bank, Vietnam. **2013 – 2014**

– Develop enterprise applications (HR) and business processing management (BPM) (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#, .NET Framework.

Solution Architect, Team Leader, VTCMobile, Vietnam. **2011 – 2013**

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

Researcher, CDIT, Vietnam. **2006 – 2011**

– Designed solutions and developed applications for Vietnam Post, used in all post offices: Telecommunications service management, money transfer service management, parcel and package management, auto-update application.

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

At the same time, I held the position as outsource software engineer for Vingroup, Vietnam.

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

– Platform: Window & Web Based Applications, .NET Framework, C#, DevExpress, SQL-Server.

Developer, Vinacomm, Vietnam (VCCorp). **2004 – 2006**

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

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, Tensor and Graph.

Machine Learning and Artificial Intelligent.

Selected Publications

Current h-index 7, 180 citations. For more details, please see my Google Scholar: `https://scholar.google.com/`

1. Dam, T.-L., Chester, S., Nørvåg, K. & **Duong, Quang-Huy**. *Efficiently Retrieving Top-k Recently Frequent Terms with a Time-decay Model* in *Under Submission* (2020).
2. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. *Multiple Dense Subtensor Estimation with High Density Guarantee* in *Proceedings of the 36th IEEE ICDE* (2020), 1–12. **One of the few papers accepted directly without revision (the direct acceptance rate is about 3%)**.
3. 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).
4. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. *Sketching Streaming Histogram Elements using Multiple Weighted Factors* in *Proceedings of the 28th ACM CIKM* (2019).
5. **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).
6. **Duong, Quang-Huy**, Ramampiaro, H. & Nørvåg, K. Applying temporal dependence to detect changes in streaming data. *Applied Intelligence* **48,** 4805–4823 (2018).
7. **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).
8. 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).
9. 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).
10. **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).
11. 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. **Selected for Best Papers**.

References

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