

# TRONG NGUYEN

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## KEY WORDS OF INTEREST

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Sampling and Approximate Query Answering; Data Warehouse and Big Storage; Streaming Systems; Distributed System

## EDUCATION

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**Ph.D. in Computer Engineering**, Iowa State University 8/2015 – Present  
**B.Eng. in Software Engineering**, Hanoi University of Science and Technology 8/2009 – 5/2014

## EXPERIENCES

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**Software Engineering Intern – Facebook** (To be) Winter 2018  
**Software Engineering Intern – Facebook** Summer 2018  
**Software Engineering Intern – Pink Inc.** Summer 2017

## PROJECTS

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**Data Sampling and Approximated Query Processing** On Going

- Design database system using sampling to reduce resources consumption while giving approximated aggregates. Sample procedure includes drawing samples, tunneling queries over sampled table(s) and properly scaling up the aggregates.
- Develop unbiased and biased sampling methods, including stratified sampling, to optimize the given budget space, leads to the most representative sample, especially in case of group-by query, with single and multiple aggregations.

**Streaming Data Warehouse System** On Going

- Develop computational methods, software toolkit, and an interactive system for massive streaming data warehouse.
- Streaming sampling algorithms and data sketching for large-scale data analysis, which can provide approximate results, with a controlled-error bound, in orders-of magnitude faster than querying over original data.

**JV2CS – API Mapping for Code Migration** 2015 – 2017

- Mining the pairwise mappings of APIs between different programming languages, the fundamental for code migration.
- Developing of a machine learning model, trained from massive open-source projects, to capture similarity in the API's functionality; overcomes the problem of lexical mismatch and difference of syntax between languages.

**Wireless Sensor Network** 2012 – 2015

- Designing new routing algorithms for unstable wireless sensor networks, that have limited resources (CPU, memory, energy power, etc.). The algorithm guarantees load balance of the network and maximizes its serving time.
- Developing of WisSim, a simulation software system for wireless sensor network.

## PROFESSIONAL SKILLS

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- Strong software design and development skills
- Deep knowledge of data structures and algorithms
- Experimented in multiples languages: Python, Java, C#, Matlab, Maven, Git, R, Excel, Latex
- C/C++, Obj-C, SQL, Tcl
- HDFS, Map-Reduce, Hive

## SELECTED PUBLICATIONS

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**Trong Duc Nguyen**, Ming-Hung Shih, Divesh Srivastava, Srikanta Tirthapura and Bojian Xu, *Variance-Optimal Offline and Streaming Stratified Random Sampling*, arxiv:1801.09039.

**Trong Duc Nguyen**, Srikanta Tirthapura, *V2V: Vector Embedding of a Graph and Applications*, in Proceedings of 32nd IEEE International Parallel and Distributed Processing Symposium Workshops (**IPDPSW 2018**), (1175 - 1183). IEEE Press. Vancouver, BC, Canada, May 2018.

**Trong Duc Nguyen**, Anh Tuan Nguyen, Hung Dang Phan, Tien N. Nguyen, *Exploring API embedding for API Usages and Applications*, in Proc. of 39<sup>th</sup> Intl. Conf. on Software Engineering (**ICSE 2017**), Buenos Aires, Argentina, May 2017.

**Trong Duc Nguyen**, Anh Tuan Nguyen and Tien N. Nguyen, *Mapping API Elements for Code Migration with Vector Representations*, in Proc. of 38<sup>th</sup> Intl. Conf. on Software Engineering (**ICSE 2016**), Austin, Texas, USA, May 2016.

**Trong Duc Nguyen**, Le Phi Nguyen, Hau Van Phan and Van Khanh Nguyen, *A Distributed Protocol for Detecting and Updating Hole Boundary in Wireless Sensor Networks*, in Informatica, Vol.40, Issue 2, pp.181.