

# Nguyen Ngoc Khanh

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## Personal Profile

Khanh is currently a research engineer at Institute for Infocomm Research (I2R) - Aural & Language Intelligence - Audio Analytics and Speech Recognition. His topics of interest include Machine Learning, Graph Neural Networks and Randomized Algorithm.

## Education

**2017-2021** BEng (Hons) in Computer Science - Nanyang Technological University  
Final Year Project - *Cluster analysis on dynamic graphs*  
Highest Distinction: *Advance Topics in Algorithms, Compiler Techniques*

## Experience

**May 2022** Institute for Infocomm Research (I2R)  
**Present** *Aural & Language Intelligence, Audio Analytics & Speech Recognition, Research Engineer*  
**Reporting Officer:** Dr. Tran Duy Dat

**June 2021** Shopee Singapore  
**May 2022** *Service Governance, Application Infra, Platform Engineer*  
**Reporting Manager:** Fang Guojian

Develop and maintain RPC platform

- Resolve platform issues from internal users
- Investigate on abnormal behaviours of the system
- Person in charge of traffic recording feature: improve performance, extend usability.

**Jan 2021** Shopee Singapore  
**May 2021** *Data Science, Anti-Fraud, Intern*

**Reporting Manager:** Dr. Dong Huang

**Project 1:** *Evaluate performance of Nebula 2 on medium and large size graphs*

- Generated LDBC SNB SF1000 dataset using Spark (~ 1.5TB)
- Transformed the dataset into suitable format for Nebula 2 using Spark
- Conducted benchmark on Nebula 2 with different configurations
- Demonstrated the capability of Nebula 2 comparing to previous database system

**Project 2:** *Named-Entity Recognition (NER) on adversarial attacks*

- Reviewed literature in neural-based techniques for NER and word segmentation
- Implemented LSTM-CRF model for NER task on address data
- Conducted experiment on address data and Surpassed the baseline model (CRF) in f1 score (0.92 → 0.98)

**Dec 2020**

Nanyang Technological University

**Mar 2021**

*Singtel Cognitive and Artificial Intelligence Lab (SCALE@NTU), Research Assistant*

**Principal Investigator:** Assoc Prof Tang Xueyan

Study the problem: *Multi-Agent Path Finding*

- Review literature in Multi-Agent Path Finding (MAPF) and Multi-Travelling Salesman Problem (MTSP)
- Designed and Proved a reduction from real-world instance to a multi-objective MTSP (mMTSP) instance.
- Designed and Implemented a relaxed optimisation algorithm for MTSP inspired by Spectral Clustering
- Improved the solution by designing and implementing a new local search method
- Designed and implemented a conflict-based search algorithm to extract mMTSP solution for real-world requirements
- Prepared specification documents and presentations

**Feb 2020**

Nanyang Technological University

**Oct 2020**

*School of Computer Science and Engineering, Student*

**Supervisor:** Asst Prof Ke Yipping, Kelly

Final Year Project: *Cluster analysis on dynamic graphs*

- Reviewed literature in Graph Partitioning, Graph Embedding, and Spectral Graph Theory, Graph Neural Networks
- Extended and Analysed Gibbs sampling algorithm on Distance-Dependant Chinese Restaurant Process (ddCRP) for Graph Clustering Problem
- Conducted experiment on power-law cluster size synthesis graphs and real dynamic graphs
- Surpassed the baseline method of 14.1% in modularity for power-law cluster size synthesis graphs
- Prepared specification documents and presentations

## Scholarships and Awards

- 2015**      Silver Medal - International Physics Olympiad  
Rank #51 (262 contestants)  
Rank #4 in Vietnamese team
- 2015**      Gold Medal - Asian Physics Olympiad  
Best theoretical score in Vietnamese team  
Rank #2 in Vietnamese team
- 2014**      Bronze Medal - Asian Physics Olympiad  
Rank #6 in Vietnamese team

## Computer Skills

- **Programming**  
*Go, Python, C++*  
*MATLAB - Basic*
- **Applications**  
*CLI Applications*  
*JetBrains IDEs*  
*Overleaf (Latex)*
- **Platforms**  
*Linux - Basic*  
*HDFS Spark - Basic*  
*Docker - Basic*

## Interests

*Writing, Hiking, Podcast, Video games*

## References

**Dr. Yipping Ke**, Supervisor  
School of Computer Science and Engineering, Nanyang Technological University  
Contact: ypke@ntu.edu.sg

**Dr. Dong Huang**, Reporting Manager  
Shopee Singapore  
Contact: dong.huang@shopee.com