

# Yuttapichai “Guide” Kerdcharoen

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## **RESEARCH INTERESTS**

Graph Algorithms, Database Systems, High-Performance Computing

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## **EDUCATION**

**Carnegie Mellon University, Pittsburgh, PA, USA and  
CMKL University (CMU | CMKL – Thailand), Bangkok, Thailand**

*Currently pursuing Ph.D. in Electrical and Computer Engineering* – Pittsburgh/Thailand Dual Degree, GPA 3.72/4.00

Selected Coursework: Advanced Database Systems (15-721), Storage Systems (18-746), Optimizing Compilers for Modern Architectures (15-745), Modern Computer Architecture and Design (18-740), Optimization (18-660)

**King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand**

*B.Sc. in Computer Science, GPA 3.98/4.00, July 2020*

Selected Coursework: Database Systems, Data Warehousing, Automata Theory, Principles of Programming Languages, Operating Systems

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## **PUBLICATIONS/TALKS**

- (Conference Paper) Kerdcharoen, Yuttapichai, U. Sridhar, and T. M. Low, “**Exploiting Fusion Opportunities in Linear Algebraic Graph Query Engines**,” 2023 IEEE High-Performance Extreme Computing Conference (HPEC).
  - (Talk) Kerdcharoen, Yuttapichai, U. Sridhar, and T. M. Low, “**Opportunities for Linear Algebraic Graph Databases**,” 2023 ARRAY Workshop.
  - (Web Article) “[RedisGraph](#)”, dbdb.io
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## **PROFESSIONAL EXPERIENCE**

**United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), Bangkok, Thailand**

*External Consultant, Software Developer, May – June 2018*

- Developed a budget programming and a dashboard system based on their legacy budget system.
  - Designed and implemented relational database schema with respect to the budget programming system on Microsoft SQL Server.
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## **TEACHING EXPERIENCE**

- Currently offering “**SYS-205 Storage and File Systems**” @ CMKL University, Pittsburgh, PA, USA (Fall 2024)
- Currently offering “**SYS-401 Parallel Computing**” @ CMKL University, Pittsburgh, PA, USA (Fall 2024)
- Currently offering “**SYS-402 Distributed Data Storage**” @ CMKL University, Pittsburgh, PA, USA (Fall 2024)

- Currently teaching "[05506050 Special Topic in Computer Science 2: Computer Systems](#)" @ Computer Science, KMITL (Fall 2024)
  - Taught "[05696111 Foundation of Programming](#)" @ K-DAI, KMITL (Summer 2024)
  - Assisted in "[C++](#)," "[Dynamic Programming](#)," and "[Graph Algorithms](#)" for the POSN2 (Computer) (March 2024)
  - Taught "[Data Engineering](#)" for the PSAC Smart program (January 2024)
  - Assisted in "[41-613 Foundation of Computer Systems](#)" @ CMKL University, Pittsburgh, PA, USA (Spring 2024)
  - Co-Taught "[05696110 Database Programming in Practice](#)" @ K-DAI, KMITL (Spring 2024)
  - Assisted in "[18-746 Storage Systems](#)" @ Carnegie Mellon University, Pittsburgh, PA, USA (Fall 2022)
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## **SELECTED PROJECTS**

### **pgfixeypointy - Fast Fixed-Point Decimals**

- A PostgreSQL extension for libfixeypointy, a fast fixed-point decimal library.

### **Foreign Data Wrapper for Columnar File Formats**

- A PostgreSQL foreign data wrapper for accessing columnar file formats (like Apache Parquet). The foreign data wrapper includes query optimizations such as projection and predicate pushdown.

### **Compiling Neural Network with Dynamic Resource Adaptation**

- An approach to improve elasticity of FlexGen for supporting multi-tenancy environments.

### **Hybrid Cloud/Local File System**

- A hybrid cloud/local (Amazon S3 and local SSDs) file system that aims for minimizing cloud storage costs. The file system can deduplicate identical file contents to reduce storage capacity. The file system can take a snapshot and recovery using taken snapshots. The file system was optimized through software-level write-back cache. The file system was implemented in C++ via FUSE.

### **PEARLS (Programming Evaluation and Rapid Learning Systems)**

- PEARLS is a learning management system for CS-KMITL. I designed and implemented a relational database schema for PostgreSQL.
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## **TECHNICAL SKILLS**

Programming Languages: C++, Java, Python, Go, JavaScript

Mathematical Packages: GraphBLAS:SuiteSparse, NetworkX

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## **HONORS AND AWARDS**

- Ph.D. Scholarship from CMKL University
- ASEAN Data Science Explorer 2020 (National Finalist, 2<sup>nd</sup> Place)
- Agoda Programming Competition 2019 (Top 50)
- Artificial Intelligence and Big Data Challenge for Data Engineer in Bangkok's Hackathon (2<sup>nd</sup> Place)