# Dang Le Dang Khoa

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*Language Proficiency*: **Python, C/C++, Bash**

## Work Experience (selected)

**Research Engineer** | **Institute for Infocomm Research - A*STAR** | **February 2020 - Present**

- Train Automatic Recognition System (ASR) using kaldi (classical ASR Engine) and Espnet (state-of-the-art end-to-end ASR engine) for South-East Asia languages, improve Word-Error-Rate (WER) by 10% on average.
- Handle audio data pipeline (for cleansing, model benchmarking, data quality evaluating) for commercial and Singapore government confidential projects in law, air traffic control domains.
- Solve denoising audio data problem by applying bi-LSTM DenseNet model.
- Optimize kaldi-based system and research on Embedding neural network for the speaker recognition task.

*Toolkits*: **kaldi, Espnet E2E**
*Technologies*: **Pandas, Numpy, Pytorch**

**Master of Engineering Candidate** | **Satellite Research Centre** | **August 2016 - August 2018**

- Implemented a design of Star Tracking Algorithms onto a Programmable System-on-a-chip system.
- Optimized the pattern recognition algorithm runtime by implementing the connected component labeling algorithm on parallel processors. Runtime is improved 64% on average compared to traditional processor approach.
- Optimized and designed the pattern searching algorithm by applying k-ary tree data structure. Time complexity and runtime improved 31%, but space complexity and memory increased 22%.

*Source code*: git.io/vpucY
*Publication*: https://doi.org/10.32657/10220/48371

## Education

**Master of Engineering** | **Nanyang Technological University** | **August 2015 - August 2018**

- School of Electrical and Electronics Engineering - Research.
- Thesis title: Implementation of An Autonomous Star Recognition Algorithm using Hardware-Software Co-Processing Approach.

**Bachelor of Engineering** | **Vietnam National University HCMC** | **August 2010 - April 2015**

- Ho Chi Minh City University of Technology - Electrical and Electronics Engineering - Second Upper Honour.
- Major in Automation and Control engineering, minor in Robotics and Embedded System Design.
- Thesis title: Applying of Fuzzy Logic Algorithm on Legged Locomotion Robot.

## Projects (selected)

**WER-in-CPP**

- Develop an open-source API to calculate Word-Error-Rate for ASR project based on Minimum-Edit-Distance problem.
- Develop new features compared to existing kaldi code: Provide WER-per-utterance utilizing upon dataset statistical analysis.

*Technologies*: **C++**
*Source code*: https://github.com/dangkhoadl/WER-in-cpp

**Problem Solving**

- Solve Computer Science and Competitive Programming Problems.

*Source code*: https://github.com/dangkhoadl/my-CS-Notebook

- Solve Machine Learning Problems.

*Source code*: https://github.com/dangkhoadl/my-Machine-Learning

**Stock Price Predictor**

- Predicted Stock Price data by Linear Regression and ARIMA modeling approaches.
- Optimized Model's accuracy by 20% by performing feature engineerings and hyper-parameters optimizations.
- Evaluated and Backtested models based on Live Stock Price Simulator on MetaTrader4.

*Financial Knowledge*:
Coursera - Introduction to Financial Markets
Coursera - Portfolio and Risk Management
*Technologies*: **pandas, numpy, matplotlib, sklearn**
*Source code*: git.io/vpuCA

**Dota 2 Hero Recommender System**

- Recommended game characters based on historical user data collected by Open Dota API.

*Technologies*: **flask, pandas, numpy**
*Source code*: git.io/fhV1q

## Certificates and Related Courseworks

- Coursera - Data Structures and Algorithms Specialization
- Coursera - Machine Learning Specialization
- Udacity - Machine Learning Engineer Nanodegree
- Coursera - Mathematics for Machine Learning
- Coursera - Introduction to Deep Learning
- Coursera - Big Data Essentials: HDFS, MapReduce, and Spark RDD
- MIT-6.041-Probabilistic Systems Analysis and Applied Probability
- UC Berkeley - CS162 - Operating Systems and Systems Programming
- UIUC - CS425 - Distributed Systems

## Competition Achievements

- Google Code Jam 2018 - Round 2 qualifier - Top 10% Candidates