RESUME
AUG 2023

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C++ PROGRAMMER

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KEYWORDS

C++
COM
Windows Service
REST API
Data Structures
Algorithms
STL
Boost
Thread-local Storage
BIM
GPS
Protobuf
RabbitMQ
MongoDB
TBB
Parallel Programming
Concurrent Programming
Docker
CMake
Kubernetes
Python
Shell
CARLA
Django
Jenkins
Robot Framework

OTHERS

GIS
OOP
SQL
Git
Ubuntu

ABOUT

A C++ programmer, and a scientist at heart. Having 10 years of experience in Computational Geometry as a key R&D engineer for Vietbando, Vietnam's leading company in GIS technology. Recently joined Vingroup to enter a whole new world of ADAS. Always yearning to make innovations at international level.

EXPERIENCE

VIETBANDO (VIETNAM INFORMATIC AND MAPPING CORPORATION)
R&D Department

OCT 2009 – MAY 2020

** Context: Single-handedly Researched and Developed for Production team **

- **Vietbando Routing Engine**: a C++ Windows Service providing a REST API to support routing requests on a road network such as *shortest path*, *Traveling Salesman Problem*, map matching, etc. By utilizing the right data structures from STL and Boost libraries, and thread-local storage programming method to implement pre-existing algorithms, over a few years, the routing engine's measurement unit went from seconds to milliseconds and, ultimately, microseconds.
  - o **Indoor Module**: a brief foray into BIM models and indoor routing.

- **Vietbando Tracking Engine**: a COM component at its core, supporting real-time location queries on GPS signals from vehicles monitored by Vietnam's Ministry of Transport. Signals are encoded/decoded using Protobuf, read from RabbitMQ, and stored to MongoDB for offline processing. Trendy applications include "filtering vehicles within a bounding box", and "finding nearest vehicles to a given location". By combining multiple advanced main-memory index structures, the engine could accommodate up to 650 requests per second, compared with the previous less-than-20.
  - o **SpeedMap Module**: an extension utilizing the flows of vehicles to construct a real-time traffic map, which can then be fed to Vietbando Routing Engine for dynamic routing. Using TBB library for parallel programming, traffic from a million vehicles can be computed within 2 seconds.
  - o **Geofence Module**: an extension providing an alert mechanism to registered users whenever their fleet of vehicles enter some pre-designated areas. Applying concurrent programming techniques to minimize locking across multiple users.

- **Miscellaneous projects** :
  - o **Polygon Detector**: an algorithm to construct polygons (with holes) from a set of polyline features.
  - o **Geohash Indexing**: various applications for point, polyline, and polygon features in a geographic coordinate system.
  - o **Trajectory Outliers**: an algorithm to discover outliers from a historical GPS dataset.

VANTIX (VINGROUP ADVANCED ANALYTICS)
Data Platform Department

JAN 2021 – FEB 2022

** Context:Team effort **

- **Autopilot QC**: a data pipeline for QC team to test VinAI's Perception modules, by deploying Docker containers that use CMake tool to build such modules, through which the test data will run, all on Kubernetes pods.

- **AnalysisTool**: a data platform for QC team to process the daily huge amount of data from testing vehicles (VFe34), use of Python and Shell scripts applied.

- **PaaS (Planning as a Service)**: a Planner & Controller module written in Python to automatically drive a car on pre-defined routes, without hitting any obstacles or violating traffic rules, given inputs from off-the-shelf Perception components, and tested on CARLA simulator.
  Achievement: runner-up on CARLA Autonomous Driving Leaderboard (Map Track) 2022

VINFAST LLC
Data Platform Department

MAR 2022 – DEC 2022

** Context:Team effort **

- **Unified Backend:** a backend to unify all legacy backends (written in Golang, PHP, SQL and MongoDB scripts) under one single technical stack, Django (a high-level Python web framework), for ease of maintenance.

BOSCH GLOBAL SOFTWARE TECHNOLOGIES VIETNAM
MS/EMC-XC Department

JAN 2023 – PRESENT

** Context:Team effort **

- **PDT (Production Diagnostics Testing) Roadmap:** a set of generic Jenkins pipelines as part of the Continuous Testing process for infotainment system across different projects (Daimler, Nissan, Stellantis, etc.), with Robot Framework (a Python-based automation framework) used under the hood.

EDUCATION

Oct 2009
Magna Cum Laude

BACHELOR OF INFORMATION TECHNOLOGY
Ho Chi Minh City University of Foreign Languages and Information Technology (HUFLIT)

Sep 2014

MASTER OF COMPUTER SCIENCE
Ho Chi Minh City University of Sciences (HCMUS)