KHEMARAT BOONYAPALUK

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Education

Brown University
Providence, RI
Graduation: May 2022
Computer Science, B.Sc.
Engineering, B.A.
GPA 3.94

Relevant Courses

- Operating Systems
- Distributed Systems
- Computer System
- Microservices Management
- Design of Integrated Circuits
- Artificial Intelligence
- Functional Programming
- Data Structure and Algorithm

Skills

Programming

100,000 Lines+
C, C++11
10,000 Lines+
JavaScript (NodeJS, React, Browser, Meteor)
1,000 Lines+
Java, Python, HTML5, CSS, Verilog, OCaml, Scala, Golang
Familiar
Assembly, MATLAB, SQL, Mathematica, CMake

Technical

System / Embedded / Front-End
Tools: LaTeX, Git, Linux
Robot System: ROS, RTOS, QNX
Agile: Scrum, JIRA, Confluence
CAD: Solidworks, Fusion360, Eagle, PADS, KiCad
Language: Thai (native), English (fluent)

Competitive Programming Awards

- **3rd place from 79 teams** in Northeast North America Region International Collegiate Programming Contest **(ACM ICPC)** as the Brown University team. Finalist in North America Championship. 2019
- **1st place** in an online algorithmic coding competition: Codeforces Round #366 Div. 2 **(6,189 Participant)**, 2016
- **5st place** in Thailand's International Olympiad in Informatics representative selection process **(from 2,000+ Students)**, 2017
- **Platinum Division**, USA Computing Olympiad, 2018

Programming Experience

Pufferfish Ventilator (Brown / Stanford / Utah) May 2020 – Present
Firmware and Hardware Engineer Rhode Island, US

- Developed embedded software for an open-source full-featured FDA EUA-pending **ventilator for COVID-19**
- Designed and implemented regulatory-standard (IEC 62304) hardware abstraction layer and 5+ drivers on STM32 microcontroller with Modern C++, along with regulatory documents

Alert Innovation May 2019 – August 2019
Embedded Software Engineer Intern Massachusetts, US

- Developed and implemented a new localization algorithm for the company's warehouse robots in C++17, which helps robots **operate in extreme conditions** (e.g. subzero temperature) and **cut downtime significantly** by automatically recover from errors and emergency stops. The code was deployed to an **entire fleet** of 40+ robots
- Modified software CMake script to speed up the recompilation time

Selected Projects

- Weenix, **a complete operating system** with processes scheduler, fully functional file system, and virtual memory
- A reliable **distributed file storage system** with distributed hash table using Golang and Zookeeper
- **C++ high throughput sound classifier**, with a Node.js web interface; National Finalist, 19th Young Scientist Competition
- A **RISV V processor** in Verilog, optimized for speed in FPGA

Web Development

Custom Book Oct 2018 – Jan 2019
Full Stack Web Developer Rhode Island, US

- Solely created a website that streamlined photobook-making process using ReactJS, Firebase, and a CSS framework from the ground up

Technical and Advising

Brown Computer Science Department Jan 2020 – Present
Sunlab Consultant Rhode Island, US

- Maintains and supports **100+** Linux departmental machines running Debian in a centralized shared file system.
- Gives technical advice to students on Linux commands and programs