





KHEMARAT BOONYAPALUK

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Education

Brown University

Providence, RI
September 2018 - May 2022
Computer Science, B.Sc.
Engineering, B.A.
GPA 3.95

Relevant Courses

- Distributed Systems at Scale
- Logic for Systems
- Analysis of Electrical Circuits
- Design of Integrated Circuits
- Compilers
- Deep Learning
- Operating Systems
- Computing Systems Design
- Distributed Systems
- Artificial Intelligence
- Computer System
- Data Structure and Algorithm

Skills

Programming

100,000 Lines+

C, C++11

10,000 Lines+

JavaScript (NodeJS, React, Meteor), Java, Python

1,000 Lines+

HTML5, CSS, Verilog, OCaml, Scala, Go, Kotlin

Familiar

Assembly, MATLAB, SQL, Mathematica, CMake

Technical

Distributed System / 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
- **5th place** in Thailand's International Olympiad in Informatics (IOI) representative selection camp (**from 2,000+ Students**), 2017

Programming Experience

Microsoft

May 2021 – August 2021

Firmware and Software Engineer Intern

California, US

- Developed a **full featured firmware** in C (3000+ lines) for a new Surface Duo accessory from scratch
- Implemented a companion **Android** application in Kotlin and Java
- Took a product from a **rough idea to the physical prototype** in 10 weeks

Pufferfish Ventilator (Brown / Stanford / Utah)

May 2020 – September 2020

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 (ARM M7) microcontroller with **Modern C++**, along with regulatory documents

Brown Computer Science Department

Jan 2020 – Present

Head Technical 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

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. The code was deployed to an **entire fleet** of 40+ robots

Selected Projects and Other Experiences

- OpenConv, a convolution neural network accelerator in **Verilog** (2021)
- Weenix, a **UNIX-like complete operating system** with processes scheduler, fully functional file system, and virtual memory (2020)
- A **RISV V processor** in Verilog, optimized for speed in FPGA (2020)
- Teaching Assistant, **Distributed Computer Systems** (2020)
- A reliable **distributed file storage system** with distributed hash table using Golang and Zookeeper (2019)
- Full Stack Web Developer, Custom Book (2018)
- **C++ high throughput sound classifier**, with a Node.js web interface. National Finalist, 19th Young Scientist Competition (2016)