Pratik Deoolwadikar

Passionate about embedded/firmware/systems software development

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India

Experience

Feb 2023 - May 2023
Samsung R&D Institute, Software Engineer
- Developed gRPC microservices as backend using protocol buffer.
- Designed & developed high-performance, cross language, event-driven and clustered system using Actor protocol.
- Configured Kong gRPC-gateway to work with redis cache.
- Implemented validation, testing, integration testing, request tracing for gRPC services.

Nov 2019 - Feb 2023 https://git.io/Jt639
Open source developer, Transformers Keras Dataloader
- Developed a Python framework that enables generator based real-time data feed to Transformer models for downstream training, unlocking the capacity to handle bigger datasets and larger batch sizes.
- Added implementation to utilize GPU and Multi-Processing for input processing and computation.
- Added support for custom layer pooling strategies to generate word/sentence input vectors.

Apr 2019 - Oct 2019
Software Engineer, Netcore
- Added multi-threading support for low-latency, high-volume, distributed services.
- Built scalable microservices for Quinto.ai's bots to run in Docker containers.
- Developed data retrieval & storage services to retrieve data from third party integrations.
- Wrote REST APIs, Asynchronous pub-sub process communication using message queues.
- Designed a data parser algorithm to obtain custom clusters from time series data.
- Design, develop ETL pipelines to transfer data from multiple OLTP (transactional) to OLAP (warehouse) databases, exposed API for analytics.

Nov 2018 - March 2019
Software Engineer, NanoPrecise
- Designed & Developed data streaming & processing pipelines utilizing AWS Kinesis, lambda, S3, Apache Kafka, Docker, MongoDB, PostgreSQL & Redis databases.
- Developed compute pipeline for analytics, utilizing multi-processing & docker containers.
- Wrote health monitoring & fault detection codebase for industrial assets.
- Designed algorithm for battery life estimation of sensors(micro-controllers). Explored algorithm performance with changes to spatial positioning & intermittent sensor operation.

Relevant Projects

Drivers for ARM Cortex M4 based MCU in C bit.ly/3PJbmaG
- Developed drivers for GPIO, SPI, I2C, USART, UART peripherals on a STM32 MCU.
- Implemented blocking/non-blocking communication with Arduino slave.
- Configured & interfaced with multiple types of memory(SRAM, Flash), bus(AHB, APB), peripheral registers, clock(RCC) and interrupt controller(EXTI,NVIC).

RTOS System Programming on STM32Fx MCU in C bit.ly/3SE7qe8
- Configured and implemented interrupt handlers for peripheral events, Systick timer.
- Wrote state machines using queues and timers.
- Implemented locking and synchronization between tasks and interrupts using mutex services and semaphores.

State machine using Linux IPC in C
- Used posix threads, signal, pipe, message queues to implement state machines.
- Applied thread synchronization & locking, used control signals and message queues to exchange instructions, input, ack, nack between concurrently executing processes

NES (game console) Emulator in C++
- Implemented NES console by emulating 8-bit 6502 CPU, 16-bit Address bus, RAM(2KB), Picture Processing Unit, Audio Processing Unit, Controller.
- Utilized SDL (and PixelEngine) for low level access to audio, controller (keyboard, mouse) and video(graphics hardware via OpenGL/Direct3D).
- Exposure to registers, opcodes, addressing modes, flags, interrupts, name-table, sprites, rendering pipeline, assembly language, low level debugging etc.

Skills

C/Embedded C, C++, RTOS Kernel, GPIO, SPI, I2C, USART, UART, POSIX IPC, Linux System API, Embedded Linux, gdb, ARM Architecture/Assembly, System Verilog, Java, Python, Spring, Hibernate, AWS, Docker, MongoDB, Apache Kafka

Courses

Mastering Microcontroller with Embedded Driver Development
Source: Udemy
- Bare metal driver development using Embedded C for STM32 GPIO, I2C, SPI, USART from scratch.

Mastering RTOS: Hands on FreeRTOS & STM32Fx with Debugging
Source: Udemy
- RTOS concepts, scheduling policies, task & interrupt synchronization, priority model, kernel tick timer, mutex, semaphores, queue management, context switching.

Android Developer Nanodegree
Awarded by: Udacity (2018)
- Advanced Android Architecture components & principles.
- Developed Apps using core API features, Hardware components, sensors and third-party Frameworks in Java.

Machine Learning Nanodegree
Awarded by: Udacity (2018)
- Machine Learning, Deep Learning, Reinforcement Learning.
- NLP, Computer Vision.

Education

Aug 2018
BE, Computer Engineering
D.T.E, University of Mumbai, India

Jun 2015
Diploma, Mechanical Engineering
M.S.B.T.E, Mumbai, India

Awards

Smart India Hackathon 2017
Awarded by:
- Ministry of Road Transport and Highways, Government of India.
- Persistent Systems Ltd.