Pavan Pongle

C++ Developer

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LinkedIn
Github repo link
Leetcode profile link

About me

For the last 9 years, I have been working in C++ application development in Cyber security, HFT and PLM & CAD domains. Mostly, I worked on C++ and related tools. I have built expertise in multithreading, lock-free programming, templates meta-programing, GUI designing and high-performance C++ coding. And I have a good understanding & interest in high performance programming and system programming. I always try to keep myself updated on latest tech and learn more, list of resources used for learning are mentioned in GitHub repository.

Skills

- C++ 11/14/17/20.
- Standard template library (STL).
- Boost, Curl, ProtoBuf, Zlib, nlohmann json, Openssl, WinPcap/PCAP etc. libraries.
- Data structure & Algorithms.
- Multi-Threading and concurrency.
- Lock-free programming.
- Template Meta Programming.
- System programming with Windows internals API/Win32 and Linux internals/POSIX API.
- IPC like TCP/UDP Sockets, Pipe, Shared memory, signals.
- Advanced Design Patterns.
- Performance tuning using Google's Micro benchmark.
- Python, shell & Batch Scripting.
- Windows Firewall, IP tables, Packet filtering table.
- High frequency trading (HFT), Cyber security, Networking, Computer-aided design (CAD).
- REST API, SOA.
- GUI designing using QT framework.
- Git, Perforce SCM.
- CMake, Make, Boost & MSBuild build system.
- Junit, gtest (Google test) unit test framework.
- Valgrind, GDB, ASAN, TSAN, Windbg, Dr Leak etc. other memory leak & thread deadlock detection tools for windows and Unix platform.
- WIX and advance installer for windows and Unix application installer.
- C#, Java, JavaScript, HTML, JSON, XML.
- Xamarin framework.
- SQL and Database.
- Windows, Linux, Mac, AIX, Solaris and iOS.

Experience

Oct 2021 – Jul 2024

MEMBER OF TECHNICAL STAFF III, Colortokens India LLP.

- Contributed to xShield agent software development in C++17 for Windows, Linux, AIX, Solaris, and Mac.
- Tasks like packet capturing, analyzing, and reporting to a server via REST API. Firewall rule programming to allow and block traffic flow. DNS, Interface monitoring and reprogramming of FW rules. Log/diagnostic report collection, compression and reporting. Reporting packet drops logs, port info and resource usage info. Support for upgrade/downgrade/uninstall of agent.
- Improved packet capture and analysis performance by adopting protocol-specific (TCP/UDP/ICMP) PCAP filters, lock-free circular buffer, spin lock, use of LRU cache, compiler flags and various other optimization techniques by taking micro benchmarking of every change.
- Extensive use of Curl, zlib, Openssl, nlohmann JSON, Google Protobuf, WinPcap/Pcap libraries.
- Implemented various feature by leveraging Windows API/internals/Win32, Unix internals/POSIX API, IPC (inter process communication) like pipe, shared memory, signals etc., use of various system calls to interact with OS, getting call stack and stack trace of running threads, invoking system commands in new process, installation with OS service manager.
- Working experience of creating installers packages for Windows platform using WIX and advance installer tools. And same for Unix platforms by using Shell scripting.
- Experience designing and executing builds using MSBuild, Make and CMake build systems for all 5 platforms.
- Taken initiative of refactoring of build scripts and improved build time by 4.5x, using parallelization and by generating dependencies files. Built opensource libraries for platform like AIX 7.x and Solaris 10/11.x.
- Analysis of core/crash dump for memory leak and high CPU usage using tools like valgrind, Windbg, Dr. leak. etc.
- Experience designing and executing unit tests using Google test framework, C++ code design & code review.
- Initiatives: log file compression, call stack and stack trace collection, improvement in Build time and packet capture.

Oct 2019 - Oct 2021

SENIOR SOFTWARE ENGINEER, FIS Global Pvt. Ltd.

- Contributed to Order Management System (OMS) module from FIS Trading Suite in C++14 language.
- The module was responsible for communicating with the exchange over the socket.
- Tasks like feature addition, bug fixes, log analysis, decoding and encoding trade/order/exchange messages to and from exchange communication protocol.
- Successfully implemented unit testing practices with a focus on test-driven development (TDD) using Google test frameworks for KRX/KRUSG exchanges and achieved more than 70% of test coverage.
- Written exchange simulator of KRX/KRUSG/SEHK for unit test.
- Worked with over 5 APAC exchanges KRX/KRUSG/SEHK/SCHK/ASX/JPX/CTP and on their native/standard protocols.
- Experience designing and development in Boost build system, Boost C++ lib, Python script, IPC, Socket programming, Gtest framework, core/crash dump analysis.

Jul 2018 - Oct 2019

SOFTWARE ENGINEER, HCL India Pvt. Ltd.

- Contributed in development of Plant Data Management module in C++11, it was module from Teamcenter (PLM suite).
- Writing unit tests in Junit framework.

Sep 2015 - Jul 2018

SOFTWARE ENGINEER, Prototech Solutions Pvt. Ltd.

- Developed Katera Visualizer an iOS app from scratch using the Xamarin framework for visualizing IFC files with the help of the xBIM toolkit, Java Script and webGL. Done shader programming for Billboard implementation.
- From scratch development of Inspection Xpert 2.0, in C++11 and QT 4.3 framework lib for UI design, along with used pdf and 3D file rendering libraries. Feature like making annotations on PDF/3D model, export of annotated data, report generation in Excel format using Excel API. Saving project file in XML serialization.
- Contributed to Inspection Xpert 1.0 maintenance, which was developed in C# with DevExpress and Excel API.

Awards

- Quarterly champion award by Colortokens in Q4 2023 for fast bringing up of Solaris Agent.
- Budding star by Colortokens, towards dashing contribution in Aug 2022.
- Recognition by FIS, for writing an exchange simulator for SEHK, KRX and KRUSG exchanges, in 2019.

Education

Masters in Computer Networks Engineering, University of Pune, India. 7.8 GPA
- Research Paper Publication in IEEE Journal 2015 On IOT Wormhole Attack Detection.
- GATE 2015 qualified with 95%.

Bachelor in Computer Science Engineering, University of Pune, India.