Yan Zhao

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Background

Staff C/C++ Developer with over 20 years of extensive experience in professional software development and system architecture. Possesses expert-level knowledge of C and C++, demonstrated by the publication of two books. The first, *Drops of Knowledge in C++ Language (Eighth Edition)*[1] is an English-language C++ book. The second, *Drops of Knowledge in C Language*[2], was recognized as one of the ten most influential tech books of 2013 by Chinese largest developer community.

I have deep experience in building high-performance, low-latency, and high-throughput systems, including high-frequency trading software. My expertise also includes low-level, hardware-related software, C/C++ compiler development, and embedded software for medical devices and IoT products. I also have strong algorithm design skills for solving real-world problems, with ten published papers and one granted patent in algorithm research. An ICSU software system based on machine-learning algorithms that I developed to won first place in an international competition. As a full-stack developer, I am proficient in object-oriented design (OOD), CI/CD pipelines, Git, Linux, and database systems. This is demonstrated by my work building a Jenkins-based platform integrated with an automated testing system for embedded devices for my employer. In addition, I built a computer knowledge website called *XinZhi Website*[3].

Education

2005	Ph.D. of Computer Science, Harbin Institute of Technology, China
1999	Master of Electrical Engineering, Harbin Institute of Technology, China
1997	Bachelor of Electrical Engineering, Harbin University of Science and Technology, China

Employment

Current	Staff C++ software engineer, Apptricity, Dallas, TX USA
2021 – 2023	Senior C++ embedded engineer, Terumo BCT, Denver, CO USA
2018 – 2021	C++/Python trade engineer, JPMorgan Chase Bank, Houston, TX USA
2016 – 2018	C++/Simulation Engineer, NASA, Houston, TX USA
2013 – 2016	C++ Compiler Engineer, University of Houston, Houston, TX USA
2005 – 2012 tenure in China	Lecturer and Chief of Teaching and Research, School of Software in Harbin Institute of Technology, Harbin China Researcher Scientist, Research and Development Center Toshiba (China) Co., Ltd., Beijing China

1 https://www.amazon.com/dp/B01ETXWMKO
2 https://www.amazon.com/language-drip-Chinese-ZHAO-YAN/dp/7115321981/ref=tmm_pap_swatch_0?_encoding=UTF8&qid=&sr=
3 https://zhaoyan.website/xinzhi/index.php

Software Products: Details (demos) are available at: https://zhaoyan.website/zy/project_e.shtml

Staff C/C++ engineer @Apptricity

Developed IoT products, including:

- Embedded devices for RFID, Bluetooth, cellular, and GPS tracking, based on Raspberry Pi and SoC platforms.
- OpenWrt and highly customized Linux systems, with RESTful APIs integrated with a Java + SQL–based micro services frontend.
- CI/CD pipelines based on Jenkins, with BDD implemented using the Python robot platform.

Senior C/C++ embedded engineer @Terumo BCT

Based on ARM Cortex-M architecture, develop firmware for medical devices.

- High-reliability software requirements in compliance with FDA regulations.
- Distributed system requiring development of multiple firmware components to control motors, valves, and sensors, with communication based on the CAN bus.
- Developed in C/C++, using a Docker-based build environment, with BDD implemented using Catch2 and Pytest.

C++/Python Trade engineer @JP Morgan Chase

Working on the Athena trading platform, developing low-latency, high-throughput applications for the Post-Trade Regulatory department.

- Responsible for analyzing and evaluating transaction data, with a focus on various FX deals processed daily by a large user base.
- Concurrent C++ programming and network programming (TCP/IP).
- Proficient in cloud development, cluster backbone servers, and message queue services.

C/C++ developer @NASA

Working on a confidential NASA project based on the Trick simulation environment and Core Flight Software.

- Developed the C++ engine and a C/C++ mathematics and statistics library to handle all backend simulation logic with maximum performance.
- Built simulation software using C/C++ for high-performance computation.

C++ Compiler Researcher@ University of Houston

C++ Compiler Project: Converting Whirl IR from the Open64 Compiler to LLVM Bitcode in the Clang Compiler.

- Gain a solid understanding of the LLVM intermediate representation (IR) used in the Clang compiler.
- Develop in-depth knowledge of compiler internals, particularly at the IR level.
- Learn and utilize Clang development tools and understand the C++ language standards (C++ 14/17/20).

Researcher Scientist @ Toshiba (China) Co., Ltd.

Chinese parser that combines head-driven statistical model and linguistic rules.

- The parser can output both phrase structure trees and dependency trees as a key component in Machine Translation (MT) system.
- Proposed and developed a Chunker that was based on Rough Set. Based on this research, a patent titled “A Chinese base noun phrase identifying method based on Rough Set” was granted.
- Machine Translation (MT) system has come into market in Japan.

Ph. D. Candidate @ Harbin Institute of Technology	ICSU Morphology Analysis System – As vast and comprehensive nature language processing software, it includes dictionary module, language model module, smoothing module and disambiguation module. The system can segment Chinese word, tag POS and recognize Name Entity. – Software developed in C++ language and STL, with the principle algorithms of some smoothing algorithm, such as Katz smoothing algorithms, some path optimization and discriminative algorithms, such as Maximum Entropy and SVM. The assistant tool software was developed by Perl language. – In 2003, the ICSU achieved the best result in segmentation disambiguation test, which is organized by the State High-Tech Development Plan (The 863 program) in China. In addition, in the second international Chinese word segmentation bakeoff held by ACL Special Interest Group on Chinese Language Processing (SIGHAN). ICSU won the best performance on Microsoft Corpus[4].
Master Student @ Harbin Institute of Technology	Software of Experimental Platform of Three Valves and Poles – Platform used to test valve pressure requirements and responding time, and has been applied in Harbin and Mongolian Railway Bureaus. – Real-Time industry controlled software. All interface components were created based on Microsoft ActiveX (COM) technology. Multithread programming made it possible to sample and show data at the same time. The software was developed in C++ language and MFC on Windows platform.

Teaching Experience

Harbin Institute of Technology	C Language - Exceptional A+ performance, award of excellence selected as Chief of Teaching and Research

Professional Activities

Microsoft Technology Club	Appointed as First Chairman of Microsoft Technology Club in Harbin Institute of Technology. Supervised students to join the NET international competition. A silver medal and the best Building Award received.

References

Reference letters and contact information are available upon request.

[4] https://pdfs.semanticscholar.org/65e9/0d9f6754d32db464f635e7fdec672fad9ccf.pdf