

# Sheldon Lobo

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## Profile

Extensive experience in binary instrumentation (native code, Java bytecode, PHP, .NET) & compilers (backend, linkers, runtime libraries).

## Skills

- C, C++, Java, Go, Python, x64/SPARC assembly
- Binary rewriting (native, Java bytecode, PHP, .NET)
- Compilers (backend, linkers, runtime libraries, debuggers)
- Docker, Kubernetes, Linux/UNIX, VMs, GKE
- App servers (Tomcat, Jetty, WLS, WAS, Go)
- MySql, Cassandra, SQLite, Redis, GCP Firestore
- make, maven, ant, gradle / git, hg
- CI/CD - Bitbucket, TeamCity, Jenkins, CircleCI

## Presentations

- Oracle Open World 2015 CON8216; [Inoculating Software, Boosting Quality](#)
- Oracle Open World 2014 CON8009; Code Analysis Tools

## Experience

### SENIOR BACKEND ENGINEER; PENDO – 2022 - PRESENT

Core distributed systems Platform team.

- Built cross GCP project migration frameworks of live customer data at scale. Copying, filtering, mutating data across GCS buckets and GCP Firestore Entities in Go.
- Responding to customer escalations with realtime AppEngine/GKE Event ingestion and batch processing GCP Pub/Sub messaging based jobs framework.

### PRINCIPAL SOFTWARE ENGINEER; ATERNITY/RIVERBED – 2021 - 2022

Application Performance Monitoring (APM) Agent team.

- Java instrumentation for APM using a C++ native profiler library with a Java jar using JNI.
- Go based [collector](#) for open source distributed tracing (Zipkin, Jaeger, OpenTelemetry)
- New support for Java frameworks focussing on distributed tracing:
  - Reactive Streams (Spring WebFlux, Reactor)
  - Jetty (Apache CXF)

### PRINCIPAL SOFTWARE ENGINEER; ORACLE – 2017 - 2021

The APM group, developing the Java Agent and maintaining the existing PHP & .NET (IIS) Agents.

- Java instrumentation for Application Performance Monitoring (APM), using the ASM library.
  - Instrumentation of a running Java VM, rather than invoking the Java Agent at startup
  - Select Java methods for instrumentation based on Annotations

- OCI & Kubernetes/OKE resource discovery using the Instance Metadata Service
- Prototypes:
  - RASP features for Oracle APM; Java probes in App Servers for detecting SQL injection, SQL audit, session begin/end, and authentication failure events.
  - Bayesian anomaly detection; converted data scientist python research to Java.
  - Rust based lightweight proxy server to detect and parse SQL for possible security monitoring.

#### **PRINCIPAL SOFTWARE ENGINEER; ORACLE – 2016 - 2017**

The Linux Engineering group, focussed on SPARC features and bugs for gcc, glibc, & binutils.

- SPARC ADI (Application Data Integrity) for glibc malloc.
- misalign memory access in gcc for SPARC.
- SPARC ASI (Alternate Space Identifier) support in binutils.

#### **PRINCIPAL SOFTWARE ENGINEER; ORACLE – 2010 - 2016**

The Code Analyzer team of the Oracle Developer Studio group. Developing the Discover and Uncover tools.

- A shared memory based custom memory error checker for the Oracle database team.
- Developed the runtime library for SPARC SSM/ADI (hardware assisted memory checking) (OOW 2015).

#### **STAFF ENGINEER; SUN MICROSYSTEMS – 1999 - 2010**

The Global Optimizer team of the Studio compiler group. Developed the -xlinkopt Studio compiler option.

- Reading & writing ELF relocatable object and binary files; DWARF debugging support
- Disassembler and re-assembler for IA-32/AMD64 and SPARC.
- Building the whole program control flow, data flow, & call graphs.
- Studio and gcc exception handling structures; C++ template code in object files.

## Patents

- 9519592 Stale pointer detection with overlapping versioned memory
- 9015686 Redundant run-time type information removal
- 8510727 Link-time redundant code elimination using functional equivalence
- 8495606 Redundant exception handling code removal
- 7861234 System and method for binary translation to improve parameter passing
- 7784042 Data reordering for improved cache operation
- 7735074 Code outlining without trampolines
- 7353503 Efficient dead code elimination

## Publication

Alexandre E. Eichenberger and Sheldon M. Lobo, Efficient Edge Profiling for ILP-Processors, Proceedings of the International Conference on Parallel Architectures and Compilation Techniques (PACT).

## Education

- North Carolina State University – MS Computer Engineering
- University of Mumbai - BE Electronics Engineering

## Work Status

US Citizen