Morris Tai

Sr. SDE at Trend Micro / Apache OpenDAL PMC

EXPERIENCE

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Trend Micro

Sr. Software Developer	Ontario, Canada. 08/2022 - Present
Software Developer	Taipei, Taiwan. 03/2021 - 07/2022

Development XDR Platform Backend

- Designed foundational platform for the XDR FedRAMP site, addressing infrastructure gaps across on-premises, public cloud, and hybrid environments. Simplified the onboarding process for all services and applications.
- Developed OLAP data lake processes to store real-time logs from upstream products, managing data volumes of over 15 PiB/site and an ingestion rate of 400 TiB/day. Optimized file sizes and counts to reduce database ingestion load using Databricks. Improved resource usage by segmenting workload groups and ensuring high availability.
- Constructed and managed the ETL pipeline infrastructure using Terraform and Helm, abstracting multi-tenancy, region, and environment configurations, and incorporating CI/CD. Enhanced observability to monitor throughput for each component and measure latency at various stages within the pipeline.
- Designed data lake queries and APIs for security hunting, including search, sweep, distinct, aggregation, and export functionalities. Enhanced query efficiency through cross-product indexing and pre-filter mechanisms.
- Developed and managed an identity-based security backend within the Kafka ecosystem. Implemented Java Spring Boot microservices, including async streaming with Java Reactor, and built JNI functions to utilize a C++ library for parsing email metadata. Collaborated with threat researchers to develop common product schemas (Avro, Protobuf). Built batch machine learning jobs using Airflow and Spark.
- Migrated the platform from a VM-based system to Kubernetes. Managed the transition from Ansible to Helm, focusing on parameterization and performance tuning. Introduced tracing and logging capabilities using Loki and Tempo.

Product Security and Research

- Researched and integrated container security solutions with Falco and eBPF/Kernel Module. Familiar with container ecosystem low-level, such as namespaces, cgroups, OCI, Shim, MicroVM, etc.
- Advocating for Rust within the company since 2021, guiding the team through its advantages and examples in our service. Reimplemented some of the pipeline function and API with Rust.
- Addressed container and infra vulnerabilities to comply with FedRAMP/PCI standards and conducted architectural reviews for SOC/ISO audits.

Intel

Taipei, Taiwan

Intern. Software Engineer (full-time)

08/2019 – 09/2020

- Worked on graphics driver source code in User/Kernel Mode. Assisted the team in debugging graphics drivers using WinDbg and mem dumps. Understand how SSE/AVX SIMD works.

EDUCATION

National Changhua University of Education

Sep 2016 to Jun 2020

- Bachelor of Management Information System minor Electronics (GPA: 3.8 /4.0)

OPEN SOURCE / SIDE PROJECT

Apache OpenDAL PMC   April 2023 to Present

- Apache OpenDAL is a Rust library designed to offer efficient data access, known for its distributed, low-latency, high-performance capabilities. I contributed to the Rust core and implemented various services and layers, including Databricks, OpenStack Swift, and Hugging Face. Additional features I developed include IO throughput limiting, server-side encryption, and a concurrent stat design for listing, etc.

Market Breadth Index

- My small subscription-based business. Its backend is mainly running on Rust and MySQL. Demo site: https://morristai.ddns.net/dashboard/

CERTIFICATE / COMPETITION

CKAD: Certified Kubernetes Application Developer | The Linux Foundation

- ID Number: LF-he54r5sc2f

Big Data Competition Championship | Microsoft/Cathay media

- As the team leader, I analyzed the data and wrote predictive models based on supervised learning and stacking model, built a solution on Azure. Through detailed research, we discovered the relationship between insurance and cancer.

AIME: American Invitational Mathematics Examination certificate

- Invited for being in the top 2.5% of participants worldwide in the AMC 12

SKILLS

- **Programming Languages**: Multilingual (not limited to any specific language), especially experienced in Rust and Python. Comfortable with C++, Go, Java.
  3+ years with Rust. Familiar with asynchronous runtime, Cargo, common traits, procedural macros and profiling. I'm currently building Nvidia GDS C++ <-> Rust binding.
- **System Programming**: Familiar with Unix-like OSes, Container/Kubernetes ecosystem, WASM.
  3+ years of develop and design cloud architecture.
- **DevOps**: Kubernetes, Istio, Terraform, Ansible, Helm, Grafana, Prometheus, Loki, Tempo, Docker, GitHub Action, Jenkins, etc.
- **Data**: Kafka, Spark, PostgreSQL, S3, Blob, Iceberg, Avro, Parquet, gRPC/Protobuf, structured-data machine learning.

Personal Blog

- https://morristai.github.io/