

Rick Gwei

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Work Experience

ByteDance Software Engineer

Sep 2024 – Present

- Led forensic watermarking R&D and drove traceability-watermark coverage from 33% to 75%; built shift-left security and automated penetration-testing pipeline.
- Awards: 2024 H2 Security Elite Award; 2025 Q1 Spot Bonus; 2025 Q4 Spot Bonus Lark Star.

JD.com Machine Learning Engineer

Jul 2021 – Sep 2024

- Contributed to core data-security products; owned digital watermarking, UEBA, and data classification & grading systems.
- Awards: 2021 JD Information Security Excellence Award; 2023 JD Information Security Breakthrough Individual Award.

JD.com Software Engineer Intern

Sep 2020 – May 2021

- Designed and built an automated permission-handover workflow for departing/transferring employees; integrated with 40+ sensitive-data systems to mitigate insider risk.

Education

Beijing Information Science & Technology University B.S. in Computer Science

Sep 2017 – Jun 2021

- Competitions: China Collegiate Computer Games Championship (International Draughts); “Internet+” Innovation & Entrepreneurship Competition.
- Volunteering: QCon Speaker Assistant, 2017 and 2018.

Projects

Digital Watermarking System

- Overview: Designed and built an enterprise-wide watermarking platform covering web, documents, images, audio/video, and LLMs; powers data-leak forensics, copyright protection, and compliance for thousands of sensitive applications.
- Architecture: Exposed watermarking via gateway, API, and RPC with dual SSO (corporate and Lark); scales to tens of millions of embeddings and millions of extractions per day.
- Impact: Drove traceability-watermark coverage from 33% to 75%; built Lark Docs invisible watermarking from scratch and integrated with DLP, enabling forensic tracing of 3,000+ external document-sharing events per day; designed zero-width-character watermarking for PDF/DOCX/XLSX/PPTX; designed LLM copyright-traceability algorithms.

Asset Security Platform

- Overview: Security asset-management and risk-discovery platform providing SDLC governance, asset discovery, and automated penetration testing.
- My Role: Designed risk-identification rules to surface sensitive data and risky assets; integrated new API endpoints with automated penetration testing to operationalize shift-left security.

UEBA Detection Algorithms

- Overview: Profiled subject-object access behavior over east-west (lateral) traffic and applied clustering over multi-dimensional risk features to surface governance alerts.
- My Role: Built user and file sensitive-data access profiling and feature engineering from scratch, proactively uncovering dozens of internal data-leak incidents.

Data Classification & Grading System

- Overview: Built a unified inventory of structured and unstructured sensitive-data assets to meet regulatory requirements and enable proactive risk sensing.
- My Role: Independently designed the data-classification model and integrated it with object storage, offline logs, offline tables, online tables, and gateway logs to scan and tag sensitive data at scale.

Skills

Programming Languages: Python; Java; Go; C/C++; JavaScript; SQL
Developer Tools: Claude Code; Codex; Git; NeoVim; VS Code; Docker

Patents

- CN121093318A. Watermark-Based Model Protection Method and Apparatus [P]. 2025-12-09.
- CN121167689A. Watermarking Method for Electronic Documents [P]. 2025-12-19.
- CN114626968A. Watermark Embedding and Extraction Method and Apparatus [P]. 2022-06-14.
- CN114692099B. Digital Watermark Embedding and Extraction Method and Apparatus [P]. 2025-08-19.
- CN115240209A. Watermark Recognition Method and Apparatus [P]. 2022-10-25.