

RICHARD GAO

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github.com/gaoric ◇ linkedin.com/in/richg1230

TECHNICAL SKILLS

Languages/Frameworks: React, TypeScript, JavaScript, Python, Node.js, Express, Java, Spring Boot
Databases/Testing/Tools: SQL, PostgreSQL, MongoDB, Jest, Vitest, JUnit, Mockito, Git, Vercel

RECENT ENGINEERING PROJECTS

Real-Time CV & Optimization App | React, TypeScript, OpenCV.js Dec 2025 - April 2026
GitHub: github.com/gaoric/LOA-ArkGrid-Optimizer

- Built a React/TypeScript CV pipeline to extract and validate live visual data for optimization workflows
- Implemented a constrained optimization engine using pruning, bitmask-based state encoding, and cached partial evaluations to efficiently search for optimal assignments under multi-variable constraints
- Reduced solver runtimes by 90% compared to an initial brute-force implementation through optimized state representation, search-space reduction, and bound-based pruning
- Used Web Workers to implement multithreading, running computationally expensive CV extraction and optimization off the main UI thread to prevent UI blocking during continuous frame processing

EXPERIENCE

Freelance Dec 2023 - Present
Full-Stack Developer

- Built and deployed a responsive, client-facing photography portfolio with Astro, TypeScript, and Vercel
- Integrated Sanity CMS with structured content schemas, enabling the client to update site copy, service details, testimonials, and gallery images without code changes
- Designed reusable gallery, service, and CTA components for maintainable, extensible frontend architecture

Municipal Property Assessment Corporation May 2021 - December 2021
Junior Systems Developer

- Delivered frontend and backend enhancements for internal property assessment systems in an Agile team with engineers, QA, and product stakeholders
- Contributed to the development and maintenance of 50+ REST API endpoints in Java/Spring Boot supporting property assessment workflows, internal system integrations, and data validation processes
- Increased automated test coverage by 60% across assigned API workflows by adding unit and integration tests with JUnit and Mockito for validation, service, and controller logic
- Refactored OpenAPI documentation for 50+ internal APIs, clarifying endpoint behavior and requirements

Homewise September 2020 - December 2020
Data Analyst

- Built a Python/pandas analytics tool to identify key factors influencing mortgage closing outcomes
- Cleaned and normalized 12K+ client records, improving data integrity across fields used for analysis
- Enriched 10K+ mortgage and property records with geospatial features, including latitude/longitude, FSA, and area type, enabling location-based analysis of deal performance and client distribution

EDUCATION

University of Toronto September 2017 - May 2022
Honours Bachelor of Science in Computer Science *with High Distinction*; Minor in Statistics