Richard To

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Experience

OSLabs | Software Engineer **2024 – Present**

React, TypeScript, Node.js, Express, PostgreSQL, Kubernetes, Prometheus, Grafana, Tailwind

- Engineered K8 Mate, an open source developer tool that monitors Kubernetes cluster metrics and component architecture visualization.
- Spearheaded a 94% conversion of the product from JavaScript to TypeScript, enhancing type safety and code reliability, preventing runtime errors, and improving code maintainability.
- Developed unit, integration, and E2E tests using Jest, SuperTest, and Cypress, composing test suites for both frontend and backend components, achieving 87% code coverage.
- Utilized React and React Flow to visualize Kubernetes cluster architecture, integrating control plane, nodes, pods, services, and containers in an interactive sandbox, optimized load times by 22% through virtual DOM reconciliation and efficient state management.
- Integrated PostgreSQL to manage relational databases for Kubernetes components, ensuring data consistency and reliability with ACID compliance, while executing advanced queries to efficiently handle complex, interconnected data.
- Developed real-time monitoring and alert systems with Prometheus and PromQL, automating Kubernetes component discovery and generating custom logs via advanced queries, delivering 8 unique alerts on cluster activity.
- Constructed RESTful APIs using Express and Node.js, enabling quick and flexible endpoint creation for various cluster operations; ensured seamless integration between frontend and backend operations, leading to a 30% reduction in data retrieval times.
- Hosted Kubernetes cluster testing instances on AWS EKS providing automatic scalability with increasing/decreasing worker nodes and a variety of EC2 instance types for improved performance-to-cost ratios regarding cluster sizing.
- Created intuitive, real-time Grafana dashboards consolidating key Kubernetes cluster metrics like CPU usage, memory consumption, and pod health into a single accessible view.

BMO | Servicing Analyst **2023 – 2024**

Excel, RIS, Broadridge/ADP, Pathway

- Managed multi-million-dollar client investments and wealth advisory services, approving CAD/USD account setups for BMO Nesbitt Burns and ensuring timely execution of high-value transactions using RIS, ADP, and Pathway systems.

Projects

Spoti – Parking App | *React, JavaScript, Node.js, Express, PostgreSQL, OAuth2.0, JWT* **2024 – Present**

- Architected secure, scalable session management with OAuth 2.0 and JWT, implementing stateless authentication with access/refresh tokens, token rotation, and revocation to prevent unauthorized access.
- Adopted Tailwind CSS to streamline styling and enhance UI/UX with a customizable, utility-first framework, creating a user-friendly interface for adding and exploring parking spots.

PantryGen – Recipe Curator | *React, Redux, Node.js, Express, MongoDB, Jest, Tailwind* **2024**

- Implemented a comprehensive test suite with Jest and SuperTest, achieving 88% coverage across API endpoints, Redux, database, and React components, ensuring reliability and streamlined testing through TDD.
- Structured Redux architecture leveraging Redux Toolkit to streamline action creation and ensure immutable state updates; facilitated efficient data access/updates across nested components through normalized state structure designs.

BookHiker – Book Discovery App | *React, JavaScript, Node.js, Express, MongoDB, Spline* **2023 – 2024**

- Designed MongoDB with Mongoose ODM to manage unstructured and semi-structured data, effectively handling book metadata, reviews, and user inputs; enhanced query performance, streamlined data processing, and ensured scalability.
- Engineered and integrated advanced 3D elements using Spline's WebGL-based engine to enhance the application's UI/UX; leveraged Spline's efficient exports to seamlessly incorporate optimized 3D assets into React components.

Technical Skills

Languages: JavaScript, TypeScript, Python, HTML/CSS
Technologies/Frameworks: React, Redux, Node.js, Express, MongoDB, PostgreSQL, OAuth2.0, Tailwind, Cypress, Jest, Docker, Kubernetes, RESTful APIs, AWS, GitHub Actions, Prometheus, Grafana, JWT, Webpack, Vite

Education

University of Western Ontario **2018 – 2022**

Bachelor of Arts in Economics *London, ON*

Public Talks & Publications

Tech Talk: Everything Kubernetes - Remake Labs Series 2024
Publications: Medium article on K8 Mate