Owen Richards

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Education

Georgia Institute of Technology   *Aug 2024 - Present*
Masters of Science, Computer Science, Specialization of Machine Learning
Relevant Coursework: Data and Visual Analytics, Machine Learning for Trading, Database Systems

University of Virginia, School of Engineering and Applied Science   *Aug 2019 - May 2023*
Bachelors of Science, Computer Science   **GPA:** 3.92
Minor, Business Engineering, McIntire School of Commerce
Relevant Coursework: Algorithms, Program and Data Representation, Data Structures, Embedded Circuits, Computer Architecture, Operating Systems, Cybersecurity, Database Architecture, Probability, Statistics, Theory of Computation, Machine Learning

Work Experience

CoStar Group   *July 2023 - Present*
Software Engineer II (Feb 2025 - Present)
- Oversee the design, development, and maintenance of a centralized marketing automation CRM for global B2B/B2C campaigns, integrating platforms like Salesforce, LinkedIn, and Google Analytics to handle millions of user records and preferences.
- Engineer scalable, high-performance solutions using C#, .NET, SQL/SSMS, Snowflake, ElasticSearch, Redis, and microservices to support 10M+ monthly queries across 7+ real estate marketplaces; spearheaded a $1B Homes.com marketing initiative that boosted system performance significantly.
- Streamline front-end development with TypeScript, React, Node, and GraphQL microservices on AWS and Docker, reducing load times and increasing unit test coverage through Agile best practices and continuous integration.

Software Engineer I (Aug 2024 - Feb 2025)
- Delivered robust marketing automation solutions for millions of data points, leveraging end-to-end development (C#, SQL, TypeScript, Node.js, React) and real-time data pipelines (AWS Lambda, API Gateway, SQS, Kafka).
- Integrated Salesforce, LinkedIn, and other platforms to enhance cross-platform functionality, automate key processes, and streamline marketing workflows.

Associate Software Engineer (July 2023 - Aug 2024)
- Designed and maintained C# services and cron jobs to manage millions of contact enrollments with high reliability, supporting marketing operations at scale.
- Developed React-based features with multi-language support for global expansion, and contributed to a scalable infrastructure that delivered high-performance marketing workflows.

University of Virginia   *Aug 2021 - May 2023*
Head Teachers Assistant - Database Systems (Aug 2022 - May 2023)
- Led academic support for 100+ students by overseeing grading and holding 7 weekly office hours to clarify key concepts in database design, query languages, implementation, and interfacing.
- Deployed 10+ class projects on Google Cloud Platform, introducing students to modern cloud infrastructure and agile development practices.

Teachers Assistant - Software Development Essential (Jan 2022 - May 2023)
- Taught software design patterns, testing methodologies, GUI, UML class diagrams, Java streams, and database fundamentals, guiding students through hands-on projects that reinforced best practices.

Teachers Assistant - Various CS Courses (Aug 2021 - May 2023)
- Mentored students in foundational computer science principles, collaborating with faculty to deliver engaging course materials and improve student outcomes across multiple classes.

nCino   *May 2022 - Sept 2022*
Software Engineer DevOps Intern
- Collaborated with 30+ product development teams to enhance DevOps practices, focusing on CI/CD pipelines, AWS infrastructure, and infrastructure as code to streamline deployments.
- Implemented custom DataDog Lambda metrics for real-time application and infrastructure monitoring, saving over $100K annually by optimizing resource usage and reducing downtime.
- Automated internal application deployments on AWS, emphasizing scalability and security through best practices such as shift-left testing, robust IAM policies, and GitHub Actions.
- Spearheaded the creation of a central developer hub (via readme.com) within the build pipeline, saving over 20,000 developer hours per year by centralizing documentation and best practices.
- Introduced Bandit security checks in GitHub Actions, bolstering application security and compliance across the organization's repositories.

Pervasive Communication Lab   *Aug 2021 - May 2022*
- Contributed to the NIH-funded Cloud-based Patient Outcome Platform (CPOP) in partnership with Emory and Harvard, leveraging deep learning methodologies to analyze large-scale healthcare data.
- Established a user-friendly UI for patient surveys and initiated AWS cloud architecture, enabling secure, scalable data collection and integration.
- Conducted machine learning research on GPU servers to optimize data parallelism, accelerating deep learning model training and enhancing patient outcome analytics.

Projects

Project Mapping AI   **Feb 2024 - Present**
- Develop an Intelligent Project Roadmapping & Resource Allocation Tool using a modular folder structure and integrate machine learning libraries (scikit-learn, networkx) for forecasting, bottleneck detection, and resource optimization.
- Implement API-based data ingestion pipelines with Python (connecting to Jira, Asana, Trello) and standardize task data in relational or graph databases to support advanced graph analysis and predictive analytics workflows.
- Containerize services with Docker and docker-compose, streamlining deployment and enabling a scalable microservices architecture for real-time scheduling and resource management.

Heartbeats - Emotion aware music recommendation Engine   **Sept 2023 - Dec 2024**
- Developed an emotion-aware music recommendation engine using Spotify's API, integrating machine learning algorithms to map user feedback and emotional states to key audio attributes.
- Visualized musical attributes with D3.js (e.g., acousticness, energy, valence) via Parallel Coordinates and interactive filtering, offering real-time insights into the link between music and mood.
- Enhanced personalization and therapeutic potential by dynamically adapting playlists to evolving user emotions, leveraging robust data processing (PapaParse, FileSaver) and an intuitive UI.

Web Developer for Architect   *July 2022 - Aug 2022*
- Developed a responsive website for a Master of Architecture portfolio, handling end-to-end functionality from UI/UX design to server-side integration.

Line-Follower Robot   *Aug 2021 - Dec 2021*
- Built an autonomous robot using C and machine learning, integrating light sensors, gyroscopes, and sensor fusion to efficiently navigate mazes.

Flower Classifier using Convolutional Neural Network   *Aug 2021 - Sept 2021*
- Engineered a deep learning model with TensorFlow on GPU servers, leveraging CNN architectures for high-accuracy flower species classification.

Assignment and Note Organizer   *Sept 2021 - Dec 2021*
- Created a full-stack web application, incorporating Google APIs for secure user login and AWS for file storage and management.

Volunteer

Program Director, **Madison House**   *Jan 2020 - May 2023*
- Organized students to donate 2,000+ hours every year at community garden.
- Oversee 8,000+ hours of students time to local programs annually.

Christmas Volunteer, **Salvation Army**   *Dec 2017 - Present*
- Pack 300+ care packages to local families including food, blankets and presents each year.

Volunteer for After School Program, **Various Middle and High Schools**   *Aug 2018 - May 2023*
- Managed after school activates and tutoring hours for middle school.
- Volunteer as a after school club leader.

Technical Skills

Languages: C, C++, C#, Java, JavaScript, Python, SQL, TypeScript, HTML, CSS, Ajax, R
Frameworks & Libraries: Angular, Django, Express.js, Flask, Node.js, React, Vue.js, Three.js, Vanta, TensorFlow, PyTorch, Keras, Scikit-learn, Pandas, NumPy, SciPy, Matplotlib, Seaborn, NLTK, spaCy, OpenCV
Cloud & DevOps:
AWS: DynamoDB, ECS, IAM, Lambda, Route 53, S3, SQS (plus EC2, RDS, CloudFormation, CloudWatch if applicable), Microsoft Azure, Google Cloud Platform (GCP), Docker, Kubernetes, Terraform, CI/CD (GitHub Actions, Jenkins), Datadog, Bandit, Kafka, Redis
Source Control & Collaboration: Git, GitHub, GitLab, Bitbucket, TFS
Database & Analytics: PostgreSQL, MongoDB, Snowflake, ELK Stack (Elasticsearch, Logstash, Kibana), Apache Spark, Hadoop