

John D. Duncan, III

Last updated on January 13, 2025

Phone | (240) 688-7187
Location | Dupont Circle, Washington, DC
Status | US Citizen

Email | cv@johnduncan.io
Homepage | <https://johnduncan.io>
Github | <https://github.com/johndduncaniii>
Linkedin | <https://linkedin.com/in/johndduncan>

MOTIVATION

Making things that are useful to people and that work well.

EMPLOYMENT

Quorum Analytics

2022–2024 | **Senior Software Engineer** | Washington, DC (50 to 70 hours/week)
2020–2022 | **Software Engineer II**
2018–2020 | **Software Engineer**
Technologies | Python, Django, PostgreSQL, React, JavaScript, HTML, CSS, D3, Redux, React Native

- Researched, designed, developed, implemented, and launched over a dozen flagship products, features, and critical systems for Quorum’s B2B SaaS civic tech public affairs platform.
- Instrumental in scaling the business from \$9m to \$64m+ ARR and the engineering team from 12 to 120+.
- Served as technical resource & mentor to dozens of engineers.
- Led cross-functional teams to collect, interpret, process, organize, update, present, and visualizing legislative, regulatory, compliance, and user-generated data.
- Delivered open ended & high-ambiguity projects on time and under budget.
- Authored 5k+ commits, 1k+ code reviews, and 700+ PRs

Projects

PAC Hybrid	Technical Lead	Team of 10
Quorum PAC	Technical Lead	Team of 8
Search UI/UX	Technical Lead	Team of 4
Dashboards	Technical Lead	Pair
Transcripts	Front-end Lead	Pair
Bulk Actions	Technical Lead	Independent
International	Front-end Lead	Pair
Regulations	Front-end Lead	Independent
Search	Pair	Team of 2

Leadership

- Full-stack Guild Leader
- Rockstar of the Quarter
- Onboarding mentor to engineers and engineering managers
- Mentored two apprentice software engineers through Quorum Accelerate Program
- Second longest tenured employee
- Longest tenured engineer

Duties

- Code review
- 24hr on-call
- Daily deployment
- Technical Design Documents
- “Learning Lab” presentations
- Interviews (technical/design)

Massachusetts Institute of Technology: Lincoln Laboratory

Summer 2016 | **Research Intern** | Lexington, MA (40 hours/week)
Technologies | Java, Android SDK, Google Maps SDK, JavaScript, HTML, CSS, SQL

- Worked on the Local Evacuation Alert Verification (LEAV) program for HURREVAC-eXtended (HVX) with the Humanitarian Assistance and Disaster Relief Systems Group at MIT LL on Hanscom Air Force Base.
- Designed and built an Android application for end users (LEAV) and a JavaScript (EXT-JS) module for the Emergency Manager front-end (HVX).

TECHNICAL SKILLS

Languages	Python, JavaScript, Go, SQL, L ^A T _E X
Databases	PostgreSQL, PostGIS, SQLite, Elasticsearch
Web	Django, React, D3, HTML5, CSS3, DOM, XUL/XPCOM
Devops	AWS (EC2, RDS, S3, Lambda, DMS, Route53), Atlassian (Jira, Confluence, Opsgenie), Docker, Kubernetes, Ansible, Jenkins, Travis

EDUCATION

Gettysburg College, Gettysburg, PA

Bachelor of Science in Computer Science (3.60, HONORS) and Philosophy (3.73, HONORS)

Computer Science	Capstone <i>Adam’s Wellness Family Connection</i>	Advisor Dr. Rod Tosten
Class of 2017	Outstanding Computer Science Student Award	
Philosophy	Thesis <i>Virtual Futures: Virtuality as Political Praxis</i>	Advisor Dr. Lisa Portmess
	Capstone <i>Infinite Horizons: The World to Mind Question</i>	Advisor Dr. Daniel DeNicola
Extracurricular	Eisenhower Institute Undergraduate Fellow (one of eight)	Advisor Dr. Shirley Warshaw
2016–2017	Gettysburg Political Philosophy Collective	Co-President
2016–2017	Gettysburg College Independents	Treasurer
2015–2017	Gettysburg Association for Computing Machinery (ACM) chapter	Secretary, Vice President

PROFESSIONAL PROJECTS

Quorum Analytics

Washington, DC

PAC Hybrid | 2024

Position | Technical lead (search, dashboards, back-end, SQL) & team leader

Team | 8 engineers, 2 product managers, 2 QA engineers, 2 engineering managers, 1 engineering director

Technologies | Django, Python, React, JavaScript, PostgreSQL, MySQL, Kubernetes, AWS RDS/DMS

Summary Designed, implemented, and launched the Quorum PAC Hybrid Federal Election Commission (FEC) reporting platform, integrating Cision's market leading Government Relations PAC Product into the Quorum PAC federal filing platform and ensuring client compliance with evolving FEC financial regulatory enforcement requirements and reporting procedures. Wrote the full-stack Search infrastructure and MVP for the full-stack Dashboard integration.

- Designed and implemented a novel search infrastructure enabling disparate filters to share values, meeting critical functional requirements and ensuring product viability.
- Developed optimized $O(1)$ QueryMethods to support complex summation and grouping over arbitrarily filtered PAC Transaction datasets in search and dashboards, replacing an inflexible yearly contribution caching model, enabling efficient searches across four datasets, and improving performance and scalability.
- Discovered and implemented an undocumented Django feature, reducing PAC Hybrid search database query response time from 60 seconds to 20 milliseconds and boosting overall performance by an order of magnitude. Optimization ensured adherence to contractual SLOs, maintaining product viability for clients managing hundreds of thousands to millions of transactions. Additionally, resolved a decade-old performance issue affecting all queries involving partitioned table joins.
- Conducted legal research by auditing 50+ years of FEC advisory opinions, identifying discrepancies and inconsistencies in the FEC's official list of national party committee C-numbers listed across the FEC website, advisory opinions, and the fec-cms GitHub repository. Research ensured client compliance with critical regulatory requirements due to elevated contribution limits for FEC-designated National Party Committees.

Quorum PAC | 2021–2023

Position | Technical Lead (search, dashboards, FEC submission, forms, back-end, SQL)

Team | 8 Engineers

Technologies | Django, Python, React, JavaScript, PostgreSQL, Docker, Kubernetes, AWS RDS

Summary Designed and implemented full-stack search and dashboard infrastructure, an FEC submission microservice using FEC's VenPak software, and forms for state political committees, charity matching, and check processing in the new Quorum PAC FEC reporting platform, enabling Quorum's entry into the \$15M+ PAC software market and helping clients remain compliant, raise funds, and report results to the FEC.

Search UI/UX | 2021

Position | Technical Lead

Team | 4 engineers (2 apprentices), 1 designer, 1 engineering manager

Technologies | Django, Python, React, JavaScript, PostgreSQL, AWS RDS

Summary Gathered requirements, designed, and implemented functional and UI/UX enhancements for Quorum's search feature, the default homepage for all users. Mentored two apprentice engineers transitioning from non-engineering careers by providing constant guidance and facilitating their technical growth. Wrote the project technical design document (TDD), collaborated closely with product and design teams, and developed reusable design system components. Delivered key new functionality, including arbitrary filter and filter group searching by name, value, placeholder, or filter options; novel ordering system enabling users to sort 15 datasets by 27 unique database columns; redesigned global search pop-down, allowing seamless access to 37 datasets from any Quorum feature or location.

Dashboards | 2019–2020

Position | Technical Lead

Team | 2 engineers, 1 designer, 1 engineering manager

Technologies | Django, SQL, Python, React, D3, react-grid-layout, Javascript, Postgres, AWS RDS

Summary Developed an industry-first, full-stack Dashboard feature empowering non-technical users to analyze and visualize data through an intuitive interface, enabling visualization, filtering, and grouping of key metrics and performance indicators and centralization of information for tracking progress, identifying trends, and evaluating performance benchmarks.

- Designed and implemented 9 widget types (e.g., List, Calendar, Visualization, etc.) to address diverse user needs.
- Wrote 73 Django SQL query methods spanning 25 datasets for complex column, date, and sum grouping for visualizations.
- Created portable D3-based visualization components (Bar, Pie, Line, and Map) utilized in dashboards and other Quorum tools such as search visualizations and official district maps.
- Engineered a novel GraphQL-like data shaping system for efficient data storage, serialization, and caching.
- Identified and resolved critical bugs in Chromium URI parsing and react-grid-layout to enhance dashboard performance.

Transcripts | 2019
Position | Front-end Lead
Team | 2 engineers, 2 engineering managers, CTO/co-founder
Technologies | Django, Python, React, JavaScript, PostgreSQL, AWS S3/RDS
Summary Developed the front-end for the Committee and Presidential Transcripts feature, enabling users to search, download, and visualize transcripts of congressional hearings and presidential speeches within an hour of completion. Implemented bi-directional video-transcript synchronization, which enabled auto-scrolling and highlighting of transcript statements during video playback or manual scrubbing and added functionality to sync video playback to specific timestamps when transcript statements are clicked. Designed and built a committee profile overview page which included rewriting a non-performant API endpoint using a novel QueryMethod to support arbitrary filtering of database columns by enum attributes, significantly improving performance and scalability.

Bulk Actions | 2019
Position | Technical Lead
Team | 1 engineer, 1 engineering manager, CTO/co-founder
Technologies | Django, SQL, Python, React, JavaScript, PostgreSQL, AWS RDS
Summary Designed and implemented a full-stack Bulk Action feature enabling users to select and update up to 1 million rows across 17 datasets with 13 action types. Researched and optimized batch updates using Django ORM and raw SQL, culminating in O(1) SQL UPDATES for scalable performance. Delivered 13 robust bulk actions, supporting high-efficiency client data processing and mutation with no reported bugs since launch in 2018. Enhanced user productivity by enabling seamless, large-scale updates in a single operation.

International | 2018
Position | Front-end Lead
Team | 2 engineers, 1 engineering manager, CTO/co-founder
Technologies | Django, SQL, Python, React, JavaScript, PostgreSQL, AWS RDS
Summary Scaled Quorum product to 2 new continents and dozens of new countries by writing the front-end for the international search feature, which allows clients to gather intelligence, identify trends, and communicate with key international stakeholders. I modified the existing official, legislation, and regulation search datasets to support filtering and visualizing international data.

Regulations | 2018
Position | Front-end Lead
Team | 6 engineers, 1 engineering manager, CTO/co-founder
Technologies | Django, SQL, Python, React, JavaScript, PostgreSQL, AWS RDS
Summary Wrote the front-end search and profile for the regulations feature, which gives clients access to comprehensive state and federal regulatory data and tracking tools. My work included dozens of filters and QueryMethods, support for alerts, lists, and downloads, and ability to set stance, priorities, and issues. I rewrote the existing Bill timeline to support Regulations and other arbitrary datasets in the future.

Search | 2018
Position | Engineer
Team | 2 engineers, 1 engineering manager, CTO/co-founder
Technologies | Django, SQL, Python, React, JavaScript, PostgreSQL, AWS RDS
Summary Re-wrote infrastructure and expanded functionality for search feature, which is the default homepage for all Quorum clients. Updated 30+ datasets with new information cards, filters, csv downloads, and visualizations. Contributed toward shared hybrid infrastructure which powered search on both the desktop React application and React Native mobile application. Due to unique functional requirements, I researched the React internals and HTML specification and wrote a library which converts raw HTML into React Elements by recursively processing DOM nodes and converting them into React elements.

LEADERSHIP

The Cairo Board of Directors 1615 Q St NW Washington, DC

2024–today | Vice President

2023–today | Secretary

- Collaborated with horticulturist from Harvard’s Dumbarton Oaks Gardens in Georgetown and landscape architect from the renowned Oehme, van Sweden & Associates landscape design firm in Capitol Hill to design, plant, install, and maintain heirloom pollinator perennial gardens for The Cairo (1894) in Dupont Circle. The Cairo, a former hotel turned condominium, is listed on both the DC Inventory of Historic Sites (1990) and the National Register of Historic Places (1994).