Engineer

Automation & CI/CD

82 achievements

Connect the parts of your system

The work collected under “Automation & CI/CD” shows one part of a working system. We can help connect that part to the rest of your operation. Numbers arriving where they are needed, on a schedule, without anyone copying a spreadsheet at the end of the month.

Explore our services Get in touch →

Find a comparable challenge

Follow an example that resembles your situation. Its review describes the decisions behind the result, beyond the technology label. One infrastructure plan for 14 departments — 14 research departments on one infrastructure plan

One infrastructure plan for 14 departments Get in touch →

30 days of electricity data in 180 ms

Engineered hourly electricity-consumption aggregation variants in Python, SQL and Bash + Jq, with the Python benchmark processing one 30-day JSONL dataset in 180ms.

Resolved 1,000 issues in geographical data

Resolved 1,000 issues in geographical data and time-series data, using GDAL, ArcGIS, PostGIS, Mapbox, QGIS, SQL (PL/pgSQL, Transact-SQL), Bash, ensuring high-quality big data processing.

Designed and ran 6 ETL/ELT pipelines

Designed, implemented, and administered 6 ETL/ELT pipelines, utilizing Google BigQuery, MSSQL, PostgreSQL, Shell scripting, PL/pgSQL, and Transact-SQL, integrating data for efficient Python API processing.

Built the company's first observability dashboard

Developed and launched the company's first observability dashboard, providing real-time system performance insights and data visualization on the large office TV.

Ran 10 PostgreSQL and MS SQL servers on Ubuntu

Designed, deployed, and maintained 10 PostgreSQL and MS SQL servers on Ubuntu Linux VPS, ensuring optimal server performance and reliability.

Wrote 1,000 RBAC rules to secure Linux servers

Enhanced data security by implementing 1,000 RBAC rules for developers, application instances, PostgreSQL, MS SQL, and other Linux servers, preventing unauthorized access; documented with Ansible automation.

Automated GIS SaaS deployment with GitHub Actions

Automated GIS SaaS application deployment, data processing, and reporting system using GitHub Actions CI/CD, Python, Bash, and SQL.

Automated delivery of 20 GIS data pipelines

Automated delivery of 20 GIS data pipelines and app data ETL processes, streamlining infrastructure automation and reporting.

Automated 100 critical data backups using Barman

Automated 100 critical data backups using Barman, Google Cloud, Bash, and Python, ensuring data integrity across databases.

Ran 20 Docker apps on Google Cloud and AWS

Deployed and maintained 20 Docker containerized applications, troubleshooting with Podman and Kubernetes, and managing R-based apps on Google Cloud and AWS.

Led access management across M365 and SSO

Prevented security breaches by leading access management initiatives, utilizing M365, 1Password, Red Hat SSO, and OKTA SSO.

Cut operational risk with Grafana and Prometheus

Mitigated operational risks by implementing a monitoring dashboard using Grafana and Prometheus, improving system reliability.

Improved team communication and collaboration

Improved team communication and collaboration by implementing Slack, Mattermost, 1Password, and Jira, saving 8,000 hours of labor.

Overhauled internal processes, saving 8,000 hours

Overhauled internal processes, saving 8,000 hours by improving software architecture, systems, and scheduling efficiency.

Administered network infrastructure

Administered network infrastructure for over 1,000 servers, ensuring optimal system deployment, security, and troubleshooting.

Automated SSL/TLS certs for 100 Docker apps

Automated SSL/TLS certificate creation for 100 Docker applications, ensuring secure connections across Ubuntu Linux hosts.

Streamlined CI/CD processes, saving 4,000 hours

Streamlined CI/CD processes, saving 4,000 hours by introducing automation in software development pipelines.

Saved 4,000 hours with GitHub and GitLab CI/CD

Streamlined data analysis and software development processes, saving 4,000 hours by introducing GitHub, GitLab, Bash, and Python CI/CD practices.

Developed a Data Analytics reporting system

Developed a Data Analytics reporting system, increasing quarterly software revenue by 400% through Python-based PDF reports.

Automated data processing in Python and PL/pgSQL

Automated data processing tasks using Shell scripting, PL/pgSQL, Python, and Transact-SQL, increasing productivity and efficiency.

Saved 150 hours a month across 30 projects

Enhanced project efficiency, saving 150 hours per month across 30 projects by optimizing workflows and resource management.

Engineered 600 PL/pgSQL ETL/ELT pipelines

Engineered 600 PL/pgSQL-based ETL/ELT pipelines to streamline complex data processing workflows across multiple PostgreSQL development and production environments.

Generated the API contract from the database out

Generated the API contract outward from the database — OpenAPI, a 44,076-line typed TypeScript client, 61 mock handlers and the limits the UI enforces — with a guard at every hop that fails on drift.

Provisioned Azure infrastructure as code

Provisioned Azure infrastructure as code with Bicep — Container Apps, PostgreSQL Flexible Server, Front Door/WAF and networking — across the development, staging and production environments.

Built GitHub Actions CI/CD pipelines

Built GitHub Actions CI/CD pipelines with a distroless production frontend image and multi-environment promotion.

Authored 578 go-task automation targets

Authored 578 go-task automation targets spanning native, Docker and HTTPS dev modes, linting, testing, database and deployment.

Owned end-to-end platform deployments to Azure

Owned end-to-end deployments of the platform to Azure, managing releases across development, staging and production environments.

Built an English/Danish i18n system

Established an English/Danish internationalization system carrying 12,027 messages per locale across 458 namespace files, with linter-enforced vocabulary and a 400-line budget per file.

Set a zero-warnings bar across six languages

Set a zero-warnings quality bar across six languages — Go, TypeScript, SQL, Python, Shell and Markdown — enforced by pre-commit hooks.

Designed a time-management and reporting system

Designed a time-management and reporting system that remained in production use for years without significant modification.

Automated team collaboration

Automated team collaboration, password management, task and time management, and built a semi-automatic project-showcase system, raising team productivity.

Integrated a company-wide password manager

Integrated a company-wide password-management system, strengthening security and streamlining access control.

Built a test suite across Go, SQL and browser

Built a layered automated test suite — 981 Go tests, 543 frontend and browser specs, 494 SQL behavioural tests — with mutation testing, property-based tests and an accessibility gate.

Built a 268-check guard engine for the repo

Built the repository's guard engine — 268 registered commit checks, 277 lint rules and 15 custom ESLint rules — plus 146 tests of the guards themselves, so the build holds the standard, not review.

Moved slow work onto a River job queue

Moved slow work off the request path onto a River job queue — 15 worker modules, 8 scheduled tasks and 20 pg_cron jobs — so a request returns while the work behind it carries on.

Ran a continuous security scanning programme

Established a continuous security programme — code scanning, DAST, dependency and vulnerability checks, SBOM generation, secret scanning and SHA-pinned actions — alongside 21 written security audits.

Infrastructure defined in a repository

Built the company's own infrastructure as 19 Ansible playbooks and 34 roles across 12,065 lines of YAML, converging a live host to a declared state with every play idempotent.

Hardened SSH to 24 validated directives

Hardened SSH to 24 asserted directives with three-stage validation — the candidate file, the assembled config, then the daemon's own read-back — after the read-back caught the running server silently overriding two of the twenty-four.

Proved the intrusion ban works every run

Proved the intrusion-banning path end to end on every hardening run by banning a reserved test address, reading the resulting kernel rule and unbanning in a guaranteed cleanup block, so a jail that stops working fails a run instead of reporting healthy.

Verified firewall rules by position

Verified firewall rules by position rather than presence, reading the numbered rule list and the live packet-filter chain, because a rule that exists is not a rule any packet reaches.

Backup automation with an explicit restore method

Implemented restic backup automation with retention, integrity checks and a monthly restore-test workflow; documented storage activation and live-restore verification as separate operational steps.

Built dead-man's-switch host monitoring

Built dead-man's-switch monitoring that pings only while memory and disk are healthy, so a degraded host raises an alert by going silent — and caught six variable names saying "free" where the check correctly measured "available", an order of magnitude apart on a 464 MB box.

Made Ansible check mode tell the truth

Made check mode tell the truth across the whole platform after finding six probes deciding on a value the host never gave, because Ansible's command module reports success under --check while skipping the command entirely.

Added a one-second preflight for secrets

Added a preflight play that runs the same code as the converge against operator-local secrets in about a second, after a half-applied production run died on its ninth task with the swap settings already written to the live host.

Reconciled a 20-record DNS zone as code

Reconciled a 20-record DNS zone declaratively against the Cloudflare API with separate audit and BIND-export entry points, and turned the CDN proxy back off on privacy grounds after building it.

Cut systemd sandbox exposure on every unit

Cut systemd sandbox exposure across every unit this platform installs — a dead-man's-switch service from 9.6 UNSAFE to 1.5, an internet-facing git forge from 8.3 EXPOSED to 1.5 — and added a converge-time parser check after finding a misspelled directive silently ignored in three unit templates.

Built 7 read-only host reporting roles

Built seven read-only reporting roles that render a live host to Markdown — facts, access, git, metrics, traffic, security and provider inventory — under a rule that no number is printed the run did not measure.

Your code on your own server

Deployed the company's own git forge on Soft Serve, private by default with no web panel and its SSH port bound to loopback behind a jump host, and made the landing page in front of it a build artefact of the main site rather than a hand-kept copy.

Ran containers on Podman and Quadlet

Deployed a container plane on Podman and Quadlet under systemd rather than Docker, because Docker's default bridge-port publishing can bypass UFW rules — and gave deploys an unprivileged user with one fixed command instead of root.

Provisioned a second server from code

Automated the provisioning of a second server on a second cloud provider, creating the firewall before the machine so it is born behind one, with both providers' firewalls written directly against their REST APIs to avoid a third-party collection.

Wrote a scope rule after a credential leak

Wrote a scope rule into the repository after a restructure carried another company's inventory, firewall allowances and prose into it — and kept the quarantined residue under the secret scanner rather than excluding it.

Split every operational secret per host

Split the four per-host operational secrets after establishing that two hosts sharing one dead-man's switch alert less than two switches, not more, and that a shared backup passphrase can expose both hosts' backups, even in separate repositories, if someone obtains it and can read both repositories' encrypted data and key files.

Built a 22-linter commit gate

Built a commit gate of 22 one-line linters plus five that earn a paragraph, with no warning tier and no inline suppressions permitted, covering HTML, CSS, JavaScript, Python, YAML, Markdown, shell, links, spelling, secrets and typography.

A safety net that no longer costs half an hour

Cut the site's browser-driven quality gate from 1,636 seconds to 615 by scheduling its checks longest-first through a worker pool bounded to four lanes, after measuring that alphabetical order cost 320 seconds against 224.

Replaced 27 font sizes with a 6-step scale

Replaced 27 rendered font sizes whose nearest neighbours were 0.6% apart with a six-step Major Third scale, and wrote the linter that fails the twenty-eighth.

The accessibility faults your checker misses

Found and fixed 11 accessibility defects the browser reported as healthy — eight footer links still in tab order behind pointer-events, a scroll timeline clipping the colophon off three pages, and a rule engine running 70 of its 105 rules.

Closed the colour system at 28 colours

Closed the colour system at 28 documented colours with a linter that fails a value painted but undocumented, documented but unpainted, mis-measured, respelled as a literal, or within a perceptual distance of 0.02 of one already there.

Found the light theme missing a whole layer

Found that the light theme had been missing a full-page overlay layer since the day it was written, by asserting that both themes paint every layered surface with the same number of layers.

Mirrored the site to Gemini and Gopher

Built Gemini and Gopher outputs from the same website source; the achievement records 777 documents in each format at that stage, with zero HTML bytes changed by adding the formats.

Replaced 963 metadata blocks with one graph

Replaced 963 anonymous structured-data blocks that restated the company 1,671 times with one linked graph of 16 types minted from stable origin identifiers.

Cut the stylesheet bundle from 87 KB to 31 KB

Cut the stylesheet bundle from 87 KB to 31 KB by taking a base64 font out of it, and dropped 756 KB across 22 files that were published on every deploy and referenced by nothing.

Fixed a sitemap with one shared timestamp

Fixed a sitemap where 172 of 176 URLs shared one modification timestamp, by taking the date from git history after establishing that the export rewrites every file on every run.

Put the documentation under its own linter

Put the documentation under its own linter — a per-file line budget that only ratchets down, an index requirement and a real-path check — which found six of nine plans marked done while carrying unchecked boxes, and fourteen commit-gating tasks named in no document.

Linted the 10,242-line quality gate itself

Brought 10,242 lines of quality-gate JavaScript under a formatter and a linter after establishing it was the largest body of code in the repository and the only one nothing read, fixing 13 findings and suppressing none.

Built a database-driven CV generator

Built a database-driven CV, references, portfolio and cover-letter generator in Python — 41 modules, 10,580 lines — rendering six output formats from one 23-table SQLite source assembled by a 19-step idempotent pipeline.

Held the generator to 981 tests and 92% coverage

Held the generator to 981 test cases at a 92% branch-coverage floor with warnings treated as failures, and asserted idempotence by running the whole build pipeline twice from an empty file and requiring the second pass to change nothing.

Passed 106 of 106 PDF/UA-1 profile checks

Recorded PDF/UA-1 validation across nine documents with 106 of 106 configured accessibility-profile checks passing, while the archival variant failed one of 146 rules.

Enabled every linter rule as an error

Selected every rule the Python linter has as an error, working through 1,815 findings to reach zero, with each of the few exemptions carrying a written reason and two of them backed by a checker instead of a comment.

Wrote tests for the checkers themselves

Wrote tests for the checkers themselves after establishing that a checker fed only clean input will one day report clean because it read nothing — planting a misspelling to confirm the spell-check finds it, and taking an id range from the database rather than from a number in the test.

Found the hooks and the gate disagreeing

Found the commit hooks and the quality gate running different checks while a document promised they were the same, by comparing the two lists in a test — the five that only ever ran by hand were the ones reading the CV prose.

Rehearsed the forge CI hook, found 2 defects

Rehearsed the forge-side CI hook and found two defects unreachable by reading the file: a fallback that put an unresolvable argument on the hook's input, and git's own environment variable following the gate into the checkout and turning 19 tests red.

Built a cross-language figure check

Built a cross-language content check that fails when a translation drops a figure the English states, and when a language uses notation it does not use — finding two Danish descriptions missing a metric and sixteen Ukrainian spans quoting in the English style.

Wrote a parser verifying every FFI call

Wrote a parser that reads the real 7,308-line C header and verifies every call site, every enum constant and that every pointer-owning class is final, after a hand-written placeholder header let calls to three removed functions compile, link and crash.

Took the test suite to 8.9 seconds

Took the test suite from six tests over a sixty-second limit to 135 passing in 8.9 seconds by profiling the main thread and removing the two calls it sat inside for 3,989 samples out of 4,017.

Named all 17 icons for screen readers

Named every icon-only control in the interface for screen readers after finding the send button announced as "arrow up circle, button", and wrote the linter that requires the label within eight lines of the icon.

Built a 48-token macOS design system

Built a 48-token design system on the platform's own glass material and wrote the linter that rejects a magic number, a hardcoded font size, or an animation that ignores the reduce-motion preference.

Reached the unused half of the core

Reached the half of the messaging core the application had never used — backup transfer, disappearing messages, message editing and resending, verified invitations, proxies and encryption policy — driving every test against the real library with no mocks.

Know the licence of everything you ship

Audited 644 Rust crates for licence compatibility on every build, and proved the check fires by rewriting one crate's licence and by moving the pinned core revision without regenerating.

Built the visual identity from 2 drawings

Built the company's icon and favicon sets from two hand-made drawings, with every derived asset regenerated by script and a check that fails when a derived file was committed before its source.

Held 4 repositories to one history standard

Held four repositories to one history standard — conventional, emoji-free, no attribution trailers, enforced by a commit-message hook — alongside 48 instruction documents that govern how the work is done.

Measured 13 addresses with no tracking

Measured thirteen addresses from the web server's own access log alone — no cookie, no tracker and no third-party service — masking the client network as each line is written, and folding the result into a permanent archive of 21 daily counts and 20 monthly facets.

Made six collectors state what they skipped

Made six reporting collectors state the part of their input they never read — files that stayed shut, probes not installed, journal lines unrecognised — and fitted thresholds to 116 measured samples, after establishing that a blind collection and a healthy host render the same page.

Focus the engineering effort

Bring a representative dataset, the questions it must answer and the current bottleneck. We can agree how to measure quality, throughput and recovery.

See what it costs Get in touch →

Put the subject in your context

Tell us how “Automation & CI/CD” appears in your own system. We can help choose the relevant service and define the work around it.

Explore our services

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