GIACOMO CATELAN

Backend Developer/Blockchain Data Engineer

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EXPERIENCE

Technical Lead / Blockchain Backend Engineer

EndLess di Giacomo Catelan

Dec 2022 – Present Remote - Trento, Italy

- Designed and built a suite of 7 blockchain analysis tools, reaching ~30 paying users at peak and iterating directly on user feedback.
- Processed and ingested over ~1M unique transactions and ~7k blocks daily.
- Developed end-to-end on-chain data ingestion and indexing pipelines using Node.js, EthersJS and MongoDB covering: swaps, token deployments, liquidity events, transfers, burns, volume data, opcode-level bytecode analysis, custom transaction tracing and more.
- Built backend services and APIs with ExpressJS to expose indexed data to internal modules and user-facing tools.
- Implemented real-time and asynchronous processing systems using socketIO to support custom event-driven workloads.
- Created operational Telegram interfaces using GrammyJS to deliver alerts, analytics, and an automated multi-chain subscription payment system with custom personal wallets, including alerts on subscription expiry, auto-removal, and one-time link generation for Telegram channels and bots.
- Deployed and managed Ethereum node infrastructure (Erigon on custom hardware) using Proxmox (LXCs and VMs), Docker, Traefik and PM2, ensuring continuous data collection and system reliability.
- Owned all aspects of technical architecture, product design, logo/brand creation, user onboarding flows, and operational maintenance.

Frontend Developer Intern

FBK - Fondazione Bruno Kessler

Nov 2021 – May 2022 Trento, Italy

- Developed an interactive ReactJS map visualizing all public trees in Trento using OpenStreetMap layers.
- Processed and enriched incomplete municipal datasets by simulating missing environmental variables via the i-Tree Eco model, including water retention, O_2 production and CO_2 absorption metrics.
- Integrated geospatial data to dynamically position each tree on the map and display detailed properties through clickable markers.
- Delivered the project as a functional prototype presented to the Municipality of Trento for potential adoption.

IT Helper

CoverUP SRL

Jul 2017 Vicenza, Italy

- Assisted in deploying and configuring new Windows workstations across multiple school sites.
- Performed diagnostics and data-recovery using Acronis on malfunctioning systems in the lab, identifying hardware and software faults and proposing remediation steps.

PROFILE

I am a self-motivated developer with a strong drive for continuous learning and fast mastery of new skills.
I have a strong interest in the world of cryptocurrencies and am particularly fascinated by blockchain technology, including its underlying mechanisms, architecture, and how all its components interact in practice.
I perform at my best in settings that encourage curiosity, flexibility, and a readiness to take thoughtful, calculated risks in order to grow and expand.
My individual projects demonstrate a practical, solution-focused mindset and an ability to learn independently while consistently producing tangible outcomes.
Although I know that certain tasks can be demanding at the beginning, I am energized by complex challenges, cutting-edge technologies, and roles that give me the chance to meaningfully broaden my expertise and push my professional boundaries.

EDUCATION

BSc Computer Science

Trento University

Sept 2018 - Nov 2022 (Incomplete)

Scientific High School — 86/100

Liceo Scientifico Jacopo Da Ponte

Sept 2014 - Jul 2018

LANGUAGES

Italian	Native
English	Proficient

PROJECTS

Most of my work is carried out in private repos.
I'm happy to walk through architecture and design choices in an interview.

Real-Time On-Chain Data Processing Platform

- Built a **real-time Ethereum blockchain analytics backend** processing live transactions, swaps, and contract deployments using Node.js and WebSockets.
- Designed a **resilient WebSocket provider architecture** with automatic reconnection, and subscription recovery for uninterrupted blockchain data streaming.
- Implemented **DEX swap detection and parsing** supporting UniswapV2, UniswapV3, Curve, and other protocols by decoding transaction logs and event signatures.
- Developed a novel **EVM bytecode trust scoring system** that analyzes selector-storage access patterns using multiset comparisons to detect suspicious smart contracts.
- Created **honeypot token detection** via on-chain simulation to identify malicious tokens before user interaction.
- Built **automated ABI recovery** from unverified contracts using whatsabi with proxy-following support and enriched with **selector similarity analysis**.
- Engineered **real-time market cap calculation** across Uniswap V2/V3 liquidity pools with automatic ETH price feeds and pool discovery.
- Implemented **wallet behavior analytics** including dormant and new wallet detection, ENS holder identification, and funding chain analysis.
- Architected an **event-driven pipeline** using Socket.IO with custom serialization.
- Designed **MongoDB schemas** for tokens, wallet analytics, and function bytecode offset patterns with bulk write operations.
- Built **RESTful API** with Express.js and OpenAPI/Swagger documentation for querying historical blockchain data without overloading the RPC endpoint.

Multi-Chain Crypto Subscription Bot

- Engineered a Telegram bot using **GrammyJS** and its runner module to manage automated subscriptions and access across **EVM** and **Solana** networks.
- Developed a resilient multi-chain listener service using **Ethers.js**, solanaWeb3JS, implementing custom heartbeat and reconnection logic for real-time payment detection.
- Integrated **Chainlink Price Oracles** via smart contract interactions to enable accurate, real-time cross-chain currency conversion and dynamic USD pricing.
- Implemented a non-custodial payment architecture with automated wallet generation and funds consolidation using native blockchain SDKs.
- Designed scalable **Mongoose** schemas to manage complex user states, trial lifecycles, and automated access revocation in **MongoDB**.

Smart Contracts' Socials Scraper

- Engineered a resilient **Node.js** scraping pipeline with self-healing process orchestration and automatic crash recovery to monitor thousands of smart contracts.
- Built a custom static analysis parser for **Solidity** contracts to extract hidden social metadata and developer comments directly from source code and not available through standard APIs.
- Implemented stealth browser automation using **Puppeteer** to successfully bypass complex enterprise anti-bot protections (Cloudflare, Turnstile) for visual verification.
- Integrated **Ethers.js** and **Alchemy** to correlate on-chain contract events with off-chain web presence in real-time.

Itinerary Weather Planner

github.com/Group19Org/Project_group19

Developed as a collaborative project during the Computer Science Bachelor's program at the University of Trento, this full-stack web application optimizes travel planning by integrating multi-city itineraries with predictive weather analytics.
Built on a Node.js and MongoDB architecture, the system enables users to map out their journeys, aggregating external forecast data to provide daily weather insights for each specific location and date along the trip.