

Alexander Milevski

Front-end / Visualization / GIS Engineer

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Software engineer building complex web applications and libraries at the intersection of creativity and technology. Specialized in web cartography, computational geometry, data visualization, and graph algorithms.

Experience

Ogma @ Linkurious

Lead R&D Engineer · 2016 - present · linkurious.com

Leading R&D on Ogma, a high-performance graph visualization library used by enterprises worldwide for fraud detection, cybersecurity, and network analysis.

Designed and implemented graph layout algorithms, spatial indexing data structures, and GIS integration. Managing a team of 3 engineers, coordinating with product and marketing.

Wikimapia

Front-end Lead · 2009 - 2014 · wikimapia.org

Solo front-end architect for one of the world's largest collaborative mapping platforms — 1.2M daily users, 25M mapped places.

Built a custom map engine from scratch: tile rendering pipeline, viewport management, smooth zoom transitions, vector overlays — no Google Maps API, no OpenLayers. Developed polygon/polyline editing tools with snapping, undo/redo, and real-time sync. Designed the UI architecture for desktop and mobile web.

Community management and user support taught me crowdsourcing dynamics, gamification mechanics, and how to build tools that scale with volunteer contributors.

Oil & Gas Permit-to-Work GIS

Solo GIS Developer · 2014 - 2015

Gis component for oil & gas safety system

Solo developer of the GIS component for an enterprise permit-to-work system. Deployed in Qatar, Oman, Australia — major oil & gas installations.

The spatial logic prevents fatal conflicts: divers working on underwater pipes while surface operations continue overhead, welding crews near potential gas leak zones, overlapping hazardous areas. Life-saving software.

Deep dive into the GIS stack: contributed a dozen plugins to the Leaflet ecosystem plus core patches. Built custom spatial indexing, zone intersection algorithms, real-time conflict detection.

Interactive schematics viewer

Applied GIS principles to industrial schematics: built an interactive P&ID browser for brownfield factories — plants where documentation exists only as scanned blueprints.

Developed markup and annotation tools, collaborative commenting, real-time sync between engineers. Performance was critical: these diagrams have thousands of elements. Built custom vector renderers, implemented the martinez polygon clipping algorithm for boolean operations, cache strategies for heavy schematics.

Research component with EU grant funding: image recognition for automated extraction of pipes, valves, and connections from scanned drawings. Turning paper archives into queryable digital assets.

martinez

Creator & Maintainer · 2016 - present · github.com

Martinez-Rueda polygon clipping algorithm implementation. Boolean operations on polygons: intersection, union, difference, xor. Handles multipolygons, holes, and complex geometries.

Used in production GIS applications for spatial analysis and map overlay operations.

polygon-offset

Creator & Maintainer · 2015 - present · github.com

Polygon offset (margin/padding) library. Generates inner and outer offset polygons with configurable arc segments for rounded corners.

Essential for buffer zone calculations, collision margins, and geometric padding operations in mapping and CAD applications.

wittgenstein

Creator · 2019 · github.com

Interactive reading experience for Ludwig Wittgenstein's Tractatus Logico-Philosophicus. Hierarchical navigation through the numbered propositions.

Exploring the structure of one of the most influential philosophical texts of the 20th century through visualization.

moscow-rings

Creator · 2017 · github.com

Visualization of distances to Moscow's main transport rings. Interactive map showing how the city's circular road network shapes urban geography.

Data-driven exploration of Moscow's concentric urban structure through the lens of transport infrastructure.

More Libraries

Creator & Maintainer · 2014 - present · github.com

More JavaScript libraries for computational geometry, data structures, and Leaflet plugins.

- **GreinerHormann** — Polygon clipping, boolean ops
- **Leaflet.Path.Transform** — Drag/rotate/resize for Leaflet
- **splay-tree** — Fast splay-tree data structure
- **avl** — Fast AVL tree for Node and browser

Skills

Languages	TypeScript, JavaScript, HTML/CSS, SQL, some C++
Visualization	WebGL, Canvas, SVG, D3.js, Three.js, graph algorithms
GIS	Leaflet, OpenLayers, Mapbox, ArcGIS API, Geoserver, PostGIS
Front-end	React, Vue, performance optimization, large codebase architecture
Tools	Git, Vite, Node.js, Docker, CI/CD
Languages	English (fluent), French (conversational), German (basic), Russian (native), Polish (basic)

Education

Moscow State Institute for Electronics and Mathematics Computer Science, 2003–2008

Thesis: Edge detection in image processing using neural networks

Moscow State Institute for Electronics and Mathematics Graphic Design, 2005–2009

Krasnopresnenskaya Art School 1992–2003, First Degree Diploma

Art & Exhibitions

I am a graphic artist working with various media: drawing, sculpture and illustration. My interest is people.

- Openbach Residence, Vincennes, 2025
- Kiff & Marais, Paris, 2025
- Openbach Residence, Vincennes, 2024
- Students Art Exhibition, CHA, Moscow, 2008
- Students Art Exhibition, CHA, Moscow, 2007
- "Artist's Book" (book-art), Modern Arts Museum, Moscow, 2005
- Non-Fiction 2004 (book-art), CHA, Moscow, 2004

Art shop: art.milevski.co