

Rengin Celik

Junior Software Developer

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EU Citizen (Bulgaria) — no sponsorship required

Software developer with a Food Engineering background. Learns fastest by building — implemented a shader from scratch within a week while working on Unity/GPU projects at iBright, picked up JavaScript to build a dependency-free browser-based hydraulics simulator in two months, and is currently developing a 2D CFD solver in C++, with an initial working demo in three months. Seeking a junior software developer role to keep building and solving applied technical problems.

EXPERIENCE

Software Developer — iBright

08/2025 – 11/2025

Fixed-term contract | Istanbul

- **Instancing & GPU optimization:** built three progressive instancing approaches (DrawMeshInstanced, Indirect, Compute-driven) to render 1M+ objects in a single draw call; implemented GPU-based frustum/spherical culling with atomic operations to offload work from the CPU.
- **Shaders:** developed a silk shader (anisotropic GGX reflections, Fresnel, iridescence, sheen) and a velvet shader (rim lighting, subsurface scattering, procedural fuzz); built dynamic water surfaces with vertex displacement and procedural wave simulation.
- **Tooling:** designed a modular 2D/3D input-movement system using a state machine architecture with ScriptableObject-driven animation pipelines.

PROJECTS

2D Incompressible Navier-Stokes CFD Solver — C++

2026 – In Progress

Personal project | github.com/rengincelik

- **Numerics:** Chorin projection method with Gauss-Seidel pressure solve and CFL-based adaptive timestep.
- **Validation:** early results checked against the Ghia et al. lid-driven cavity benchmark; further cases in progress.
- **Rendering:** real-time visualization of the velocity/pressure field using SDL2.

PipeFlow — Vanilla JavaScript, Zero Dependencies

02/2026 – Present

Personal project | [Live on GitHub Pages](https://live.on.github.pages)

- **What it is:** a browser-based real-time pipeline flow simulator — drag-and-drop pumps, pipes, valves, elbows, and reducers, recalculating pressure, velocity, flow rate, and losses every 100 ms.
- **Physics:** Darcy-Weisbach friction loss, Colebrook-White solved via fixed-point iterations, Borda-Carnot expansion losses, pump operating point via bisection against a 3-point H-Q curve.
- **Architecture:** decoupled modules (simulation engine, SVG/canvas renderers, diagnostic engine) wired through a custom event emitter; no UI framework, no build step.
- **Diagnostics:** a 21-rule hydraulic diagnostic system checking velocity, Reynolds regime, and pressure margins against Crane TP-410 / ISA-75.01.

EDUCATION

Istanbul Technical University (ITU) — B.Sc., Food Engineering

2016 – 2022

Istanbul, Turkey

- Relevant coursework: Fluid Mechanics, Thermodynamics, Heat & Mass Transfer, Process Systems Design, Numerical Methods.
- Applied coursework tools: MATLAB, Python, AutoCAD.

TECHNICAL SKILLS

Languages: JavaScript (ES6+), C++, C#, HTML5, CSS3, HLSL

Real-Time & Graphics: SVG Rendering, Canvas 2D, GPU Instancing, Unity URP, Shader Development

Simulation & Numerics: Darcy-Weisbach, Colebrook-White, Bisection, Gauss-Seidel, CFL Timestepping

Tools: Git, Unity, VS Code, WebStorm, CLion

LANGUAGES

Turkish — Native/Bilingual | English — Proficient