ADRIEL RAFAEL MATEI

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PERSONAL PROJECTS

◇ Lunarbox

Lunarbox is a **strongly-typed visual functional programming language** I wrote in Purescript. It features an interactive editor, type inference, a basic linter & optimizer, a color-encoding of types, cloud sync, an admin interface, and an example & tutorial system.

◇ Shimmeringmoon

Shimmeringmoon is a **Rust-based toolchain for the rhythm game "Arcaea"**. The program provides an image score-data extraction system based on a hand-made OCR and image-recognition implementation, statistics presentation using a hand-made software renderer, and integration with community-made private server implementations, all accessible through a convenient Discord bot.

◇ Lunarflow

LunarFlow is a **lambda calculus visualizer** written in PureScript using concur and algebraic effects via free monads. During its development I researched and implemented multiple tree transformation algorithms based on recursion schemes, including a size annotator, shape-preserving (eta) reduction and a layout generation algorithm.

◇ Erratic gate

During the summer of 2019 I developed a web editor and simulator for logic gates using **TypeScript** with **react** and **rxjs**. The simulator features an extensive interactive editor (drag&drop, selections, clipboard operations, etc), integrated circuits (custom components encapsulating a piece of logic), up to 32 bits per pin, support for multiple languages and locales, and configurable components which enables extensibility from the user.

◇ Lunarlog & moonlog

Moonlog is a simple implementation of an indentation-based logic programming language using PureScript. During the summer of 2021, I went a step further and created Lunarlog — a **visual logic based programming language** implemented using a handmade Purescript graphics library.

ACTIVITIES

◇ InfoEducație   2019 - Present

InfoEducație (the olympiad of digital creation and innovation) is a country-wide programming contest in Romania. The contestants develop a project, which they then present to a group of judges across multiple phases. The top 5 contestants for each predefined category go on to compete in a 24h hackaton. I have competed and **won second place at the national phase for 3 years in a row**. Moreover, I have been part of one the judge committees for the national phase ever since 2023.

WORK EXPERIENCE

◇ Feram   August 2023 – Spring 2025

As a **Haskell** and **Elm** software engineer, I worked on multiple features of Airsequel — a SQL management service that generates GraphQL APIs for the underlying data. Features I have worked on include a cloud function runtime supporting sandboxing for multiple languages, and a dynamic GraphQL introspection system on top of SQL.

◇ Visonum   June 2022 – April 2023

As a **Purescript** software engineer, I worked on multiple projects related to network quality testing. I learnt a lot about writing quality unit tests, processing streams of data and integrating PureScript into existing Javascript codebases.

◇ Wargame arena   Spring of 2022

As a **Purescipt** freelancer, I worked on the development of an interactive UI for a wargame playing platform. I solved tasks ranging from bringing mockup UIs to reality using **Halogen** and **CSS**, to implementing Firebase-based authentication and interacting with a server using websockets.

EDUCATION

◇ BSC Mathematics

📅 September 2022 – June 2025

University of Groningen

◇ Math and Computer Science

📅 September 2018 – June 2022

Ștefan Demetrescu high school

SKILLS

PROEFICIENT	Purescript – TypeScript – Haskell – NodeJs – Neovim
INTERMEDIATE	Rust – Elm – Nix – Python – Lua – LaTeX – Typst – SQL – Odin
BEGINNER	F# – Lean – Idris – C