# MATEI ADRIEL RAFAEL

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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.

### Lunarflow

LunarFlow is a **lambda calculus visualizer** written in PureScript using concur and algebraic effects via free monads. During it's 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.

### Logic gate simulator

During the summer of 2019 I developed a web editor and simulator for logic gates using **TypeScript** with **react** and **rxjs**. The simulator featured an extensive interactive editor (drag and 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.

### Doffycup

Doffycup is an **interactive programming teaching tool** me and a friend developed in the final round of the infoeducatie contest. The project combines a live-updating, scratch-like, read-only code interface with a cup guessing game in order to create an unique experience that has been tested on a number of kids with great success.

### 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

### Infoeducatie

Infoeducatie is a country-wide programming contest in Romania. The contestants create a project, which then they 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 3 years in a row**.

## WORK EXPERIENCE

### 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.

### 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.

### Feram

 August 2023 – present

As a **Haskell** and **elm** software engineer, I worked on multiple features of Airsequel, which is a SQL management service that generates GraphQL apis for the underlying data. In particular, I implemented a custom cloud function system supporting multiple runtimes, which taught me about sandboxing and everything that entails.

## EDUCATION

### Math and Computer Science

 September 2018 – June 2022

Stefan Demetrescu high school

### BSC Mathematics

 September 2022 – present

University of Groningen

## SKILLS

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|---|---|
| **PROEFICIENT** | Purescript – TypeScript – NodeJs – Neovim |
| **INTERMEDIATE** | Rust – Elm – Nix – Haskell – Python – Lua - Latex - Typst |
| **BEGINNER** | F# – Lean – Idris |