



Pedro Probst Minini

Developer | Machine Learning Engineer | Data Scientist

✉ pprobst@insiberia.net

🐙 github.com/pprobst

“More data – such as paying attention to the eye colors of the people around when crossing the street – can make you miss the big truck.” – N. N. Taleb

🎓 Education

Federal University of Rio Grande do Sul (UFRGS), Porto Alegre - RS, Brazil 2021 – 2023

Ongoing M.Sc. in Computer Science (Artificial Intelligence).

Federal University of Santa Maria (UFSM), Santa Maria - RS, Brazil 2017 – 2021

B.Sc. in Computer Science.

👥 Formal Experience

Yet Another AI Group | UFRGS 2021 – 2023

AI Researcher

– Tech: C++, Python, PyTorch, Numpy, Pandas, Seaborn, Scikit-learn, XGBoost

- Conducted R&D on neural networks and sampling generation for classical planning domains with the purpose of learning heuristic functions and preferred operators to aid during search.
- Wrote several machine learning models, in particular RNNs, GNNs and gradient boosting.
- Modified a large C++ codebase to support our changes, the *Fast Downward* planning system.

Data Mining Applied to Analog Games (DMAG) Group | UFSM 2019 – 2021

Researcher & Data Scientist

– Tech: C++, R, Python, Pandas, Matplotlib

- Contributed to data science tasks, such as data collection/cleaning, clustering, and classification.
- Main contributor to a C++ version of the board game *7 Wonders*, used as a platform for testing bots with rule-based (heuristic) and neural-network-based AIs.

Núcleo de Ciência da Computação (NCC) | UFSM 2019

DevOps & Developer

– Tech: Python, Flask, Jenkins, PostgreSQL, CI/CD

- Developed a prototype API with the *Flask* micro-framework.
- Helped with DevOps tasks utilizing *Jenkins* and *GitLab CI/CD*.
- Maintained the computer laboratories of the CS department.

JAI Progressive Web Apps | UFSM 2018

Developer

– Tech: Python, Flask, JavaScript, Ionic

- Contributed to prototype applications regarding the schedule and rating of academic works during UFSM's *Jornada Acadêmica Integrada* (JAI, an internal academic workshop), effectively reducing the use of paper and “digitalizing” the event.
- At the time, both applications used the Ionic framework for the development of Progressive Web Apps (PWAs), and the *Flask* micro-framework for API development.

</> Selected Projects

Roguelike | github.com/pprobst/roguelike

A *roguelike* game written in **Rust**, following the Entity-Component-System (ECS) architecture. It also has several procedural dungeon generation algorithms – *Random Walker*, *Cellular Automata*, *BSP Trees*, *Diggers/Tunnelers* and the innovative *WaveFunctionCollapse* (WFC), adapted to work with ASCII characters.

YAAIG's Neural Fast Downward | github.com/yaaig-ufrgs/NeuralFastDownward

A fork of *Neural Fast Downward* focused on novel strategies of sampling generation and training several neural network models with **PyTorch**, with the intent of predicting heuristic values for states in the search state space of classical planning tasks.

Beatrice | github.com/pprobst/beatrice

A simple and configurable static blog generator written in **Go**.

DMAG's 7 Wonders | github.com/dmag-ufsm/7Wonders

A **C++** version of the board game 7 Wonders, but focused on being playable by AI bots.

Yukimacs | github.com/pprobst/yukimacs

My personal Emacs distribution written in **Emacs Lisp**. It's quite popular.

Publications

Learning Preferred Operators for Classical Planning 2023

Minini, P. P.*; Bettker, R. V.*; Pereira, A. G.; Ritt, M.

In revision. 37th Conference on Neural Information Processing Systems (NeurIPS) 2023.

Understanding Sample Generation Strategies for Learning Heuristic Functions in Classical Planning 2023

Bettker, R. V.*; Minini, P. P.*; Pereira, A. G.; Ritt, M.

In revision. Journal of Artificial Intelligence Research (JAIR).

Towards playing AIs for 7 Wonders: main patterns and strategies for 3-player games 2021

Bettker, R. V.; Minini, P. P.; Pereira, G. G.; Assunção, J. V. C.

XX Brazilian Symposium on Computer Games and Digital Entertainment (SBGames 2021).

Combining Constructive Procedural Dungeon Generation Methods with WaveFunctionCollapse in Top-Down 2D Games 2020

Minini, P. P.; Assunção, J. V. C.

XIX Brazilian Symposium on Computer Games and Digital Entertainment (SBGames 2020).

An Implementation of the 7 Wonders Board Game for AI-based Players 2020

Jardim, J. P. C. R.; Bettker, R. V.; Minini, P. P.; Pereira, G. G.; Acosta, J. G. S.; Assunção, J. V. C.

XIX Brazilian Symposium on Computer Games and Digital Entertainment (SBGames 2020).

Skills

Programming Languages

- Rust
- C
- C++
- Python
- Go
- R
- Shell scripting

Toolkit

- SQL
- BigQuery
- Git
- Emacs & Vim
- PyTorch
- Scikit-learn
- Numpy
- Pandas
- XGBoost
- Matplotlib/Seaborn
- PySpark
- Databricks
- OpenCV
- Flask
- L^AT_EX

Interests (* indicates previous experience)

- Procedural Content Generation*
- Game AI*
- Game Development*
- Entity-Component-System*
- Machine Learning*
- Data Science*
- GNU/Linux SysAdmin*
- Simulation of Natural Systems
- Cryptocurrencies & Finance
- Decentralized Systems & Privacy

I am comfortable with learning new programming languages, frameworks and tools.

Languages

- Portuguese (native)
- English (fluent)
- Spanish (intermediate)
- Japanese (N4)

Achievements

- 1st place in a programming competition at my undergraduate university for the category “advanced” (2019).