Raúl Beltrán Gómez

Home: Havana, Cuba

Email: rb58853@gmail.com **Phone:** (+53) 58486223

Github: https://github.com/rb58853

CV: https://rb58853.github.io/CV/

ABOUT ME

I am Raúl, a computer scientist with a solid background in mathematics. My specialty lies in the analysis and design of algorithms, combined with advanced skills in frontend and backend programming, which allows me to work as a full-stack developer. My experience extends to the application of machine learning techniques and artificial intelligence, with my thesis project being in this field.

My methodological approach includes the use of agile methodologies such as Scrum and Kanban, which allows me to work efficiently and adaptably. I value the importance of maintaining clean, organized, and well-commented code, following the SOLID principles to ensure the quality, maintainability, and scalability of software.

My professional interests lean towards number theory, graph theory, and the development of solutions in the field of machine learning and artificial intelligence. I am open to working on projects that require both frontend and backend development, as well as game development, and I am committed to creating optimal solutions.

EDUCATION AND TRAINING

[09/2018-01/2024] **Bacherlor's Degree in Computer Science at *University of Havana***

City: Havana

Country: Cuba

Field(s) of study: Arificial intelligent and Machine Learning | Information Retreval Systems | Compilers | Operative Systems | Databases and Sofware

Engineering | Distributed Systems | Networks | Data Structure Analysis and Algorithms | Desing and analisis of algorithms | Graph Theory | Number Theory.

PROJECTS

[04/2024-06/2024] **Devman Chat Bot**

Machine Learning, Information Retrieval System | Python

Enhancing E-commerce Product Discovery with Embeddings and OpenAI GPT API. This project leverages cutting-edge technologies such as embeddings, IRS with Typesense, natural language processing (NLP) techniques powered by the OpenAI GPT API, and advanced information retrieval.

Github: *private*

[06/2023-12/2023] **Image Retrieval System using Machine Learning**

Machine Learning, Information Retrieval System | Python

In this project, the problem of precise image retrieval is addressed. The work employs a new approach: the application of the Segment Anything (SAM) segmentation models and the Constractive Language-Image Pretraining (CLIP) model for the generation of multimodal embeddings.

Github: https://github.com/rb58853/ML-RSI-Images

Paper: https://rb58853.github.io/CV/projects/IRSImagesCLIP/IRSImagesCLIP.pdf

[09/2023-11/2023] **Cool Compiler**

Compilers | MIPS, Python, Cool

This project addresses the creation of a compiler from the Stanford University's Cool language to MIPS. Each stage of the compiler has been developed: Syntax Analysis, Semantic Analysis, and Code Generation to MIPS using CIL as intermediate code.

Github: https://github.com/rb58853/cool-compiler-2023

[02/2023-5/2023] **Audio Genre Classification**

Machine Learning | Python

Several machine learning approaches to accurately categorize music tracks into predefined genres. Each approach uses different sets of features that can be extracted from songs; ranging from common ones like MFCC (Mel-frequency cepstral coefficients) and direct audio signals to less explored features in this context such as song lyrics and Wavelet Transform.

Github: https://github.com/science-engineering-art/mugenfier

Paper: https://rb58853.github.io/CV/projects/audioML/audioML.pdf

[02/2023-5/2023] **Distributed ftp**

Distributed Systems, Networks | Python

This project focuses on the design and implementation of a distributed file transfer protocol (FTP) system using Python, with a particular emphasis on leader coordination through the Bully algorithm

Github:https://github.com/maux96/distributed-ftp

Paper: https://rb58853.github.io/CV/projects/distributedFTP/paper.pdf

[02/2023-5/2023] **Desing and analisis of algorithms**

Desing and analisis of algorithms, Dinamyc Programing, Graph Theory | Python

Design and algorithm analysis works that have the best possible complexity for the given problem. With formal and detailed demonstrations.

Github: https://github.com/maux96/DAA-problema-1

Github: https://github.com/rb58853/Tito-el-corrupto

[11/2022-1/2023] **Nav Mesh Agent AI**

Artificial Intelligent , Unity | C#

A multi-agent system is a system composed of multiple agents that interact with each other and have the capacity to communicate with each other. Among the main characteristics of an agent, it is important to highlight its autonomous behavior, its local vision of the system, and its decentralization, meaning that there is no entity that controls the global behavior of all agents.

Github: https://github.com/rb58853/NavAgent-AI

Paper: https://rb58853.github.io/CV/projects/navMeshAgentAI/NavAgentPaper.pdf

App: https://t.me/+Eh4DRMgqdtYzMDlh/c/1870877745/3

[11/2022-1/2023] **Information Retieval System for text documents**

Information Retieval System | Python

This project focuses on the development of a sophisticated information retrieval system that integrates multiple advanced techniques to enhance precision and efficiency in document retrieval. The strategies employed include the use of vector models, latent semantic analysis (LSA), Vaswani attention, and the implementation of Trie structures for indexing and grouping documents.

Github: https://github.com/lido98/RIUL

[9/2022-10/2022] **Little Archemy**

Django, Telegram Bot | Python

This project combines the power of Django, a high-performance web development framework, with the interactivity of Telegram bots to create a unique platform dedicated to generating mathematical elements through virtual alchemical processes.

Github: https://github.com/rb58853/Little-Archemy

Paper: https://rb58853.github.io/CV/projects/littleArchemy/paper.pdf

App: https://t.me/+Eh4DRMgqdtYzMDlh/c/1870877745/3

[2/2022-3/2022] **Azul**

Declarative Programing | Prolog

This project involves implementing a simulation of the popular board game Azul using the declarative programming language Prolog. Azul is known for its tile placement mechanics and scoring based on patterns and sequences.

Github: https://github.com/rb58853/Azul_Prolog

Paper: https://rb58853.github.io/CV/projects/azul/paper.pdf

[2/2022-4/2022] **Yugi Oh Backend APP**

Django | Python

A database project to store and manipulate information about players, cards, matches, and tournaments of Yu-Gi-Oh. It follows good programming practices, both in terms of architecture and the correct use of the API and CRUD (Create, Read, Update, Delete).

Github: https://github.com/rb58853/yugioh-backend

SKILLS

- **Programming Languajes**

  Python | C# | MIPS | C | C++ | Prolog | Javascript | Dart

- **Markup Languajes**

  LaTex | Jupyter Notebook | Markdown | CSS | HTML

- **Frameworks**

  Django | ASP.NET | ReactJS | Flutter | Unity Engine

- **Algorithms Knowledge**

  Graph Theory | Number Theory | Language Theory | Dinamyc and Greedy Programing | Combinatorics | Algebra | Data Structure Analysis and Algorithms

Language

Native Language: Spanish

Other Language(s): English (B1)