

Algorithms and Data Structures

- Proxy Implementation (Java).
- Algorithm to find the shortest and quickest route and an interface (Java).
- Algorithm simplified for the allocation of high-school teachers into schools (Prolog).
- Interactive simulation of memory allocation algorithms (first fit, best fit, worst fit) with statistical data (C++) and graphical interface (OpenGL, GLUT).
- Simulation of a Football League (Scheme).
- Fly Tickets Reservation (C).

Artificial Intelligence

- Development of an expert system of earing diseases (Prolog).
- A Multi-Agent System to explore and choose paths in a forest using AI agents (Java, JADE).

3D Programming

- Modelling and animation of a 3D scene (OpenGL, GLUT, GLUTI, C++).
- **Modelling an Particle System Engine (Open GL, GLUT, GLUTI, C++).**
- Implementation of game (Amazons) in Prolog with a 3D interface (OpenGL) via UDP sockets.

Low Level Programming

- Implementation of a compiler for a target language (Bison, Flex, GCC).
- Programming directly on the frame buffer, a plot drawing software (C, ASM).
- Alarm manager with the PC speaker and internal counters (ASM).

Networks Programming

- Data transmission over serial ports (C).
- Download of WebPages robot(C, GTK).
- Distributed applications (UDP, TCP, Java, C, Java RMI, Remoting .NET).

Databases

- Radio Station Database (SQLServer, ASP.NET 1.1).
- Auctions On-line (PostgreSQL, PHP).

Others

- Development of a plugin to User-friendly Desktop Internet GIS (Udig, Java). This project was implemented for INESC-Porto.

- Played the role of a Marketing Manager in the simulation of a real company. We implemented an Electronic Invoice System. This project was implemented for SAGE Portugal.

Management

- Study, analysis and report of **Crialme** (a textile firm) functional areas. Study of the impact of IT in the management of the firm.
- Study, analysis and report of a problem in the course of Operational Research, and report a solution.
- Study, analysis and report of the Three Gorges Dam through three dimensions: Safety, Sustainability and Ethics.



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