

The First Years of The Computer Science in Portugal

So far as I Know, nobody, in the portuguese universities (Porto, Coimbra and Lisboa) worked with automatic digital computers, before 1963.

Note - For instance, all the calculations in my Ph. D. thesis (on instrumental Astronomy, using Applied Mathematics and Electronics) finished in 1959, were made using numerical tables and manual (later operated by electric motor) Facit calculating machine.

Uring the Easter vacation of 1963, in a week course offered by I. B. M., in the Hilversum Centrum (Holland), I met Mr. Encarnação, later the director of the Computer Center of Darmstadt University, who, I think, in those days, was also a beginner in software.

Note – During the academic year of 63/64 – because I found two colleagues who kindly took over my academic work freely – I stayed as a senior visitor, at the Mathematical Laboratory of Cambridge University, under the direction of Prof. Wilkies. Among other activities, I made some research on “GOTO pairs” as cells (electronic swiches) for the fast memory of a new developing computer. Such pairs, suggested by a japonese scientist (mr. GOTO were built by two tunnel diodes : this research, including laboratory work (with oscilo copes, pulse generators , etc) and the study of a mathematical model (a system of 4 non-linear differential equations) is described in a internal publication of the Cambridge University.

As in those days, an young member of the Portuguese Government had been one of my good students and trusted me, it was possible in 1966 during a month of my holidays to make a visit to England in order to select a computer.

In this way, it was possible for me in the end of 1967 to install in my faculty (Faculdade de Ciências da Universidade do Porto) the first digital computer in a Portuguese University. Such computer was used for scientific computation by all the Portuguese universities and for teaching, in some free courses, programming languages (Fortran, Algol and Assembler) and in a regular courses, Numerical Analysis for my two or three hundred a year students.

It was a 4130 computer system (build by Elliot-I.C.L, in England) started with a magnetic memory of 16 k words (24 bits, 2 μ s cycle time) and a central processor using hardware for floating point operations. The communication with the machine was made by paper tape (8 bits) punched on teletypes (about twelve). One year later, because of the success of the investment ...we bought a memory of 64 k

words by 5 millions escudos (which means, today, about half a million DM. ...!). Later, the system was implemented with 4 magnetic tape handlers (13 MB each), a plotter and a good line printer. This system worked in good conditions, continuously, for more than 15 years!...

In the eighties, the number of universities (state and private), technical colleges and computers (particularly Personal Computers and Work Stations) grew suddenly (like mushrooms in a wet day...). Now, we have very good groups on Computer Science at the international level.

Backing in the thirties, forties and fifties.

My personal experience: a typical case.

My first public contact with Electricity was made in the secondary school, when I was 16 (1937), when I made a speech to my colleagues, entitled "A Fada Electricidade" (Fairy Electricity).

After about 5 intermittent years of military service (during the war) I finished my graduations in Mathematics (4 years, including Pure Mathematics and Astronomy, Rational Mechanics, Probability, Calculus, Geodesy, Physical-Mathematics and Celestial Mechanics) and in Geographic Engineer (+ 1 year).

By appointment of my professor of Astronomy (Dr. Barros) I was invited in 1947 as an assistant, to teach practical classes of Descriptive Geometry in the Faculty of Science. Two years later I also took up all the practical classes of the 2nd year Calculus Course.

At that time I taught 32, even 36 hours a week practical classes to more than 300 students of Science and Engineering!...

Those were very hard times with shortage of money: we were a small poor country, governed by law and humanities peoples. Only civil and electrical (not electronic) engineering received some help from the Government.

At same time in 1951, requested by Prof. Barros, I started alone my research work to build-up, starting from nothing the Time Service for the new Astronomical Observatory, just being born. I must say I did all kinds of work: from wire-man or blacksmith to electronic or mathematician scientist!...

Note- Prof. Barros, a Civil Engineer and Ph. D in Applied Mathematics, started and directed the new Astronomical Observatory, designing and directing, in a private Portuguese mechanical firm, the construction of practically all the instruments to be installed. I helped him, mainly in all electrical and electronic parts of the new instruments.

We made a very good team, without holidays: I received from him a good example of what scientific work is like – he was ten years older than me – and a very good help in the design of mechanical parts of my equipment.

My initiation into Modern Electronics at the time, started when I attended a three months course to become “transmission officer” (using the modern American telephones, radios and accessories) in the Army, during the military service.