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PROFESSIONAL EXPERIENCE

2013 – present **Petroleum-Gas University of Ploiesti (UPG), Romania**
*Director of **CerTIMF** Research Center*

- scientific research activities, collaboration with local industry partners

Main projects:

1. zGreen – automatic system for monitoring and control of indoor farming of fresh produce and microgreens;
2. PBR4/20/200 – closed photobioreactors for controlled algae/spirulina cultivation - collaboration with Tehnopro Engineering srl and ICDEAPA (Research and Development Institute for Aquatic Ecology, Fisheries and Aquaculture - Galati)
3. zThermo – consumer-grade thermal camera for human body temperature measurement based on mid-infrared sensor with integrated deep neural network for video processing and black body reference temperature compensation in real-time;
4. HyRok – development of the first Romanian hybrid rocket engine with power modulation – project STAR ROSA (Romanian Space Agency) SPECH: Research, design, development and bench testing of a hybrid reactive propulsion system for space launcher applications area, with innovative inhomogeneous fuel and adaptive electrical control of parameters;
5. VizTop, VizNet, 3D DIY-printer, IntelSec, MonTemp, WeldMon, Localo, Aemy, StepMonitor, TIMF-library, gipix-eCall etc. - details: https://timf.upg-ploiesti.ro/www/proiecte/

2013 – present **Petroleum-Gas University of Ploiesti (UPG), Romania – Associate professor**
Department of Computer Science, Information Technology, Mathematics and Physics (iTIMF)

- teaching activities (lectures, seminars, projects), Bachelors' projects supervision
- scientific research activities, Masters' research projects supervision
- administrative activities, network and servers maintenance and administration
- local (UPG) administrator for the RoEduNet academic and research network

2017 – present **reachAI, London, UK**
co-founder

Democratisation of Sports Analytics with AI/Deep Learning on Edge devices: intensive use of deep learning for different aspects in sports analysis for football, horse racing, snookers.

2015 – 2016 **Elettra Communications SA, Ploiesti, Romania – subsidiary of Finmeccanica SpA, Italy**
IT consultant for the NATO Alliance Ground Surveillance (AGS) program

Project: Wide Band Data Link (WBDL) subsystem for AGS, which will offer a line-of-sight broadband, bidirectional data link between the AGS airborne platform (Global Hawk drone) and the ground-based components

2012 – 2013 **Petroleum-Gas University of Ploiesti (UPG), Romania – Assistant professor**
Department of Information Technology, Mathematics and Physics (TIMF)

- teaching activities, lectures, labs and projects supervision
- scientific research activities
- administrative activities and department's network and servers maintenance and administration

2005 – 2012 **ZealSoft Ltd, Bucharest, Romania – IT manager**
researcher, designer and developer for software and hardware solutions

Main projects:

1. ePH – Framework for building of a dynamic user community that shares public interest information and knowledge that is accessible through always-on, context-aware services, open source project;
2. Unde.ro ("unde" means "where" in Romanian): the site is a geospatial search engine for Romania. Based on the Google Maps API, it adds new map tiles and address searching for the Romanian region. It contains a GIS database for address-based search. A specialized web-

crawler is under development for finding in the Romanian web space different addresses or points of interest (see touristic, accommodation, gas stations, pharmacies, hospitals etc. within a given distance – to be available online, free). Here geo-referencing included http://www.unde.ro;

3. GiPiX is a GPS/GSM based Automatic Vehicle Location (AVL) system under current development. It is meant to be both a personal and fleet management system for mobile device location over the Internet. The project involved the design and development, both hardware and software, of a GPS/GSM mobile tracking device, a communication protocol and back-end server, a database back-end and a GUI interface. Hardware development included full design of the embedded device, from schematics, PCB layout design, prototype production, assembly, testing. Different CAE/CAM tools were used. Software development included microcontroller programming in C (Microchip), embedded communication module programming in Python (Telit) or C (Microchip), communication protocol implementation, both on the embedded device, and on the communication server using C/C++ and Linux, database design (MySQL, noSQL Redis), and a web interface for user presentation JS/Ajax/PHP (http://gipix.unde.ro , http://www.unde.ro);
4. IHS (Intelligent House Solution), which is intended to be an integrated solution for automatic control of house/small office processes, HVAC;
5. fID (fIDelity) – research project on the development of a loyalty program system for a travel agency using mobile and RFID technologies; included the implementation in a POS-like embedded Linux and development of a communication protocol over GPRS and Internet;
6. NECLib2 – a full digital library that contains various media objects that represents 18000 classical music CDs (many of these being very rare) from a private collection that have been donated to NEC. Programed in MySQL, PHP, Javascript, AJAX, and C++/Linux (http://library2.nec.ro);
7. Gaccs – a multi-level TCP/IP-based control access system, which enables an authority to control access to areas and resources in a given physical facility, based on credentials. Hardware development included full design of the embedded device, from schematics, PCB layout design, prototype production, assembly, testing, by using various CAE/CAM tools. Software development included microcontroller programming in C (Microchip), implementation of a TCP/IP communication protocol, both on the embedded device and on the communication server using C/C++ and Linux, database design, and a web interface for user presentation, using html, JavaScript, AJAX; support for RFID proximity;
8. zxChip – a project for developing a car engine ECU piggyback device for advanced race-tunning purposes with selectable running mode and realtime monitoring and logging capabilities. Hardware development included full design of the embedded device, from schematics to final product. Software development included Microchip microcontroller programming in C with USB support and Microsoft Windows .NET C++ application for configuring and monitoring the device;
9. zxPkH – a project for developing a hardware driver for peak and hold injectors used in race cars;
10. RFC tester – a project that had Siemens AG as beneficiary, it aimed to model and develop a test platform for one of the RFC protocol drafts. The software is an implementation of the QoS NSLP, which is a NSIS (Next Steps in Signaling) Signaling Layer Protocol for signaling QoS reservations (e.g. bandwidth, delay, etc.). It was programmed in C/C++ for Linux, with a web-based real time monitoring user interface made with PHP & JavaScript /AJAX.

2009 – 2010 **Petroleum-Gas University of Ploiesti (UPG), Romania – managing editor**
Bulletin of PG University of Ploiesti, Mathematics, Informatics, Physics Series (BMIF) – Scientific Journal

Main contributions: architecture and development of the journal's online peer review and publishing system, scientific reviewing, international database indexing (http://bmif.unde.ro)

1999 – 2004 **Norwegian University of Science and Technology (NTNU), Trondheim, Norway**
research fellow, Department of Computer and Information Sciences (IDI)

Main projects involved:

1. Main designer and developer of the QADPZ system, an open source system for desktop grid and volunteer computing, allowing easy management of computational resources from idle computers in networks of computers. It was developed in C/C++, with support for multiple operating systems (Linux, Win, MacOS, Unix), multiple users, compression, and encryption. A subset of the Message Passing Interface (MPI) was implemented on top of QADPZ, allowing execution of already written programs, which use MPI, in a similar parallel environment. The system is installed on more than 80 computers from IDI's labs and on IDI's Beowulf cluster, and is currently used for computational intensive research projects around the world, http://qadpz.sourceforge.net/;
2. Chief architect of the department's Beowulf cluster of 40 PCs used for research projects (ClustIS). Responsible for ordering, installation, configuration and maintenance of the cluster. It is running the Source Mage GNU/Linux operating system, a source based Linux distribution, where each of the installed software is compiled from source, with optimizations for the hardware platform, http://ClustIS.idi.ntnu.no;
3. Member of the Computational Science and Engineering (CSE) project at NTNU university. This was an interdisciplinary, interdepartmental research project, with collaboration between different

research groups in engineering, computer science and mathematics, from NTNU and the research organization SINTEF. There was a strong emphasis on high performance computing and numerical methods for problems in the marine fluid mechanics domain, using finite elements methods (FEM), supercomputers and clusters for the numerical simulations;

4. Member in the 3D Virtual Reality CAVE project (Cave automated visual environment), a five wall, full-immersive virtual reality environment for 3D visualization;
5. Student volunteer involved in organizing over 10 large scientific conferences (SIGGRAPH, IEEE Visualization, IEEE Virtual Reality, Supercomputing, ICCBR), from USA, Japan, and Norway.

1992 - 1997 **"Politehnica" University of Bucureşti (UPB), Bucureşti, Romania**
student, Computer Science and Engineering Department (CSE)

Main projects:

1. JScm – a compiler for the Scheme functional language, generating byte code for the Java VM; the project consisted in converting a Scheme program into the continuation passing style (CPS), then generating an equivalent low level Java assembly language program for the Java virtual machine, which was then compiled to Java byte code, using a Java assembler;
2. Unix Vision – an OO text-mode user interface for Linux. The project consisted in porting the Turbo Vision user interface (developed for DOS) to a Unix-style environment, and involved reprogramming the low level terminal device interface in C and assembler;
3. Ada2C++ – an Ada to C++ translator for Unix; the project consisted in a lexical and a syntactical analyzer for a subset of the Ada language, for the purpose of automated translation into C++;
4. IP stack for the Thix OS – implementation of the basic IP protocol stack for the Thix Operating System, an UNIX-like operating system developed in the CSE department.

TEACHING EXPERIENCE

2013 – present **Petroleum-Gas University of Ploiesti (UPG), Romania – associate professor**
Department of Computer Science, Information Technology, Mathematics and Physics (iTIMF)

2012 – 2013 **Petroleum-Gas University of Ploiesti (UPG), Romania – assistant professor**
Department of Information Technology, Mathematics and Physics (TIMF)

2009 – 2012 **Petroleum-Gas University of Ploiesti (UPG), Romania – visiting assistant professor**
Department of Information Technology, Mathematics and Physics (TIMF)

1999 – 2003 **Norwegian University of Science and Technology (NTNU), Trondheim, Norway**
teaching assistant, Department of Computer and Information Sciences (IDI)

1997 – 1998 **"Politehnica" University of Bucharest (UPB), Bucharest, Romania**
teaching assistant, Computer Science and Engineering Department (CSE)

INDUSTRIAL EXPERIENCE

1998 – 1999 **OmegaSoft Ltd, Bucharest, Romania**

2004 – 2012 *Designer of Hardware&Software Architectures, Developer of hardware and software solutions, Linux System Administrator*

Main projects involved:

- Tourneo – an on-line reservation system for hotels in Bucharest and many other cities in Romania. It had been implemented the on-line payment with credit card for this site, using the novel Visa/Mastercard 3D Secure system. The work was done in cooperation with Romcard, Romania's leading provider for card payment systems. It was one of the first three web sites in Romania accepting on-line credit card payments using this system (http://www.tourneo.ro);
- ZCENT – a very low-cost GSM-based call center, with typical capabilities like: welcome message, call waiting/recording/forwarding, conference. The system is using out of the shelf phone terminals, connected to a PC using an original, custom made switching board. The software is programmed in C++ for Windows with a web interface for configuration and monitoring;
- ZPOS/wPOS – a Point of Sale (POS) and back-office management system for fast foods. It is a network based system, that allows working both from Intranet and Internet and, also, multi-input (PDA, touch screen etc.). It works both on Linux and Windows operating systems, allowing a flexible deployment. The PocketPC module allows also to work from wireless points. Programmed in a combination of AJAX, PHP and C/C++ (WindowsCE), with a MySQL backend;
- Linux servers – administration and performance monitoring and tuning for LAN/Internet/VPN; advanced MySQL database administration and performance tuning.

1999 – 2012 **New Europe College, Bucureşti, Romania**
developer of IT solutions

- NECLIB2: a full digital library that contains various media objects that represents 18000 classical music CDs (many of these being very rare) from a private collection that have been donated to NEC. Programed in MySQL, PHP, Javascript, AJAX, and C++/Linux (http://library2.nec.ro);
- NECLIB: a web based on-line library catalogue firstly developed for The New Europe College (NEC). The system allows the readers to do complex searches for books in the catalogue, and helps the librarian to keep track of the users and loans. Programed in Perl and MySQL for Linux (http://library.nec.ro);
- INTLIB: undergoing project for interconnecting all deployments of the same program at other similar institutions (see New Europe College, The Center for Independent Journalism, The Institute for Art History, The University of Arts), allowing distributed search in different catalogues;
- Undergoing work on different automation solutions of the existing IT infrastructure for easier management and monitoring.

1998 – 1999 **ZealSoft Ltd, Bucharest, Romania**
software developer

- SIDER: an innovative (for 1998-year) Internet search engine, meant for the Romanian web-space that was a distributed system and was developed using modern object-oriented software engineering methods (RUP, UML). It was programmed in C++, Perl, and MySQL for Linux.

1997 – 1998 **SOFOS SpA, Roma, Italia**
software developer

- Worked in a team on the ViaSat project. ViaSat is a real-time distributed vehicle security system using GPS positioning. It was developed in collaboration with Com.Net, SpA, subsidiary of Telespazio, Italy. The system is functional in Italy and Austria. I was involved in all aspects of software development, including analysis, design, developing, testing and documentation of the GPS position correction subsystem and the central communication subsystem. Developed in C/C++ for Windows NT, with TCP/IP for communication.

1997 – 1999 **Arexim SA, Bucharest, Romania**

- Internet consultant, Internet Service Providing Department. Main designer of the hardware infrastructure configuration, required Linux servers and software. The ISP department was providing dial-up Internet access for a couple of hundreds external clients;

1996 –1997 **Bit Soft Ltd, Bucharest, Romania**

- project manager, software developer - Worked in a team with WTT (World Travel and Tourism), a Romanian travel agency, on the first Internet based on-line reservation system for hotels in Bucharest and other cities in Romania. Developer of the MAESTRO accounting software system. Involved in all phases of the product elaboration. The application is multi-platform (Windows, MacOS), and based on the 4D RDBMS. Worked in a team on the SITEL project. SITEL is the most used hotel front-end system in Romania. Involved in development of software interfaces with different other systems (pay-tv, telephone switching systems, etc.). Internet communication infrastructure design, implementation and maintenance using Linux PCs.

1994 – 1995 **AnziSoft SRL, Bucharest, Romania**

- software developer - FAST project, an application for product stock management of pharmaceutical companies. It is a database application written in FoxPro for DOS, with support for Novell/Netware networks. Heavy use of the SQL language was involved in the application

EDUCATION

1999 – 2004 **Norwegian University of Science and Technology (NTNU), Trondheim, Norway**
Department of Computer and Information Sciences (IDI)

2008 – PhD in Computer Science
"A Desktop Grid Computing Approach for Scientific Computing and Visualization"

1992 – 1997 **"Politehnica" University of Bucureşti (UPB), Bucureşti, Romania**
1997 – dipl. engineer in Computer Science and Engineering
"Scheme Compiler for the Java Virtual Machine"

PERSONAL SKILLS

Skills

- 35+ years of extensive work experience in various aspects of computer software analysis, design, development and testing;
- 30+ years of experience with the Linux operating system at different levels, from installation, kernel hacking to high-level programming (since 1993);
- 25+ years of experience with the Internet (high/low level network protocols);
- 20+ years of experience with digital hardware and embedded systems design and development, both at hardware and software levels;
- Theoretical and practical knowledge of software engineering, operating systems, object-oriented methodologies, compilers, parallel and distributed systems, real-time systems, artificial intelligence, deep neural networks;

- Able to optimize programs, to use difficult algorithms and protocol specifications;
- Programming languages: C/C++, Perl, JavaScript, Java, Python, PHP;
- Parallel/distributed programming: MPI, OpenMP, PVM, Corba, Orca, Linda; functional languages: Scheme, ML, Lisp; databases: MySQL, PostgreSQL, Redis, MS SQL, Oracle;
- Operating Systems: Linux, Windows, Android, eCOS, DOS, SunOS, Ultrix, CPM;
- Schematic layout and PCB design: CadSoft Eagle;
- Microcontroller experience: Microchip PIC, Espressif ESP32, Atmel Atmega;
- PLC automation: Wago, Beckhoff;
- Simulation software: Ansys;
- Embedded Linux systems, RaspberryPi;
- 3D printing systems;
- Autonomous embedded robots;
- Communication protocols: RS232,SPI,I2C,CAN,USB,WiFi,BT,BLE,ZigBee,EtherCAT;
- GSM modules experience: Siemens/Cinterion, Telit, Simcom, Quectel;
- GPS modules experience: SiRF StarII/III; uBlox; Quectel;
- RFID experience: 125kHz, 13.56MHz, 900Mhz;
- Very good theoretical and practical knowledge of computer networks: Internet (TCP/IP), Novell (IPX/SPX), Windows (NetBEUI,SMB);
- Excellent mathematics background and very good analytical skills;
- Self-management, self-motivated, task-oriented, efficient and quick learner, imaginative, innovative and critical thinking, communication, initiative, determination, patience, problem-solving, and working well under stress, able to work in a team environment or unsupervised.

Volunteer experiences

- Student volunteer for the following conferences: SIGGRAPH (2000, 2001, 2002), Supercomputing (2001, 2002), IEEE Visualization (2000, 2001, 2002), IEEE Virtual Reality (2001), ROSE'95 (1995), ICCBR (2003)

Memberships

- INSTICC (Institute for Systems and Technologies of Information, Control and Communication) from 2009,
- IAENG (International Association of Engineers) from 2008,
- ACM (Association of Computing Machinery) from 1999-2010,
- IEEE Computer Society from 1999-2010
- National Geographic Society, PMI (Project Management Institute) 2000-2012.

Languages

- Romanian, English, Hungarian, French, Italian, Norwegian

Awards

- National Mathematics Contest, Hungary, 1990 – Second prize
- National Mathematics Contest, Romania, 1986 – First prize

OTHER

Publications list, references available upon request or details at http://www.unde.ro/zoran