

Daniel Herrera Castro

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Education

My academic trajectory is certainly not standard and deserves an explanation. I began my Systems Engineering studies in late 1996 at the age of 14 in the Universidad Latina de Costa Rica. At the age of 15 I began working and continued to take the three activities (high school, university, and work) simultaneously until 1999, when I finished my university and high school degrees. In 2002 I began my Electronics Engineering studies while working full time. In ITCR I maintained a full student workload while still working full time for the first two and a half years, then stopped working to take 1.5 times the workload of a full time student for the rest of the program. My final project for the Electronics Engineering Bachelor degree was done in Germany.

Currently studying a master in Computer Vision and Robotics in a joint program between the Heriot-Watt University (Scotland), Universitat de Girona (Spain), and Centre Universitaire Condorcet (France). A summary of my studies follows:

Université de Bourgogne, Universidad de Girona, and Heriot-Watt University Msc. Computer Vision and Robotics – 3 rd semester	France Spain United Kingdom	2008
Instituto Tecnológico de Costa Rica Bsc. Electronics Engineering	Costa Rica	2007
Universidad Latina de Costa Rica Bsc. Systems Engineering	Costa Rica	2000
Colegio Calasanz High School	Costa Rica	1999

Professional Experience

My professional experience can be divided into three areas according to the application. However, it is worth mentioning that great benefits have been obtained by combining the different areas. For example, by designing a high level (C#) tool to analyze the output of a low-level algorithm.

Engineering software

Academic and professional experience with computer vision algorithms. Design, implementation, and testing of a real-time computer vision algorithm for road sign recognition. Several academic projects to explore different computer vision areas (digital watermarking, feature detectors and descriptors, image segmentation, 3D reconstruction, motion reconstruction). Participated in a research group for underwater robotics using vision to estimate motion.

Hardware

Several personal and academic projects in hardware and low level software design. Developed several academic projects in the areas of automatic control and hardware design. Developed applications for high level software to hardware integration. Developed Win32 low level network drivers to implement network sniffing and filtering. Assembler experience with microcontrollers and PCs.

High level commercial software

Eight years of experience in informatics related with administrative and technical distributed applications. Design and programming of distributed commercial applications. Design and optimization of SQL databases. Experienced with a broad variety of programming languages (Visual C++, VB.NET, C#, SQL, Multidimensional Expressions {OLAP}, HTML, ASP.NET). Broad experience with different programming techniques (Win32 API, COM {Component Object Model} and DCOM, ActiveX, Relational, and Multidimensional databases, .NET Framework, WebServices, Embedded Software {Symbian, J2ME, RTOS}). Strong knowledge on information security (Firewalls and screening routers, Proxies, Cryptography, general code security and most of today's common internet network protocols {TCP, UDP, IP, SMTP, FTP, etc.}) Special emphasis in application architecture design (n-tier class models for .NET, security, scalability, performance, etc.)

Previous jobs

Please note that these are the jobs considered **most relevant** to the recipient of this CV. Many other jobs were left out to keep it brief.

Scotland		
Heriot-Watt University Research Assistant for vision based motion tracking	5 months	2007-10
Germany		
Siemens VDO Intern developer of computer vision algorithms	5 months	2007-06
Costa Rica		
Instituto Tecnológico de Costa Rica Research Assistant for computer vision	1.5 years	2006-11
Universidad Latina de Costa Rica Lecturer – Web application development	3 months	2002-06
Tecnosistemas Pridessa S.A. Chief of Research and Development System Architect	5 years	2005-06
Intel Corporation Software Analyst/Programmer	1 year	2001-05
Prides S.A. Software Analyst/Programmer	3 years	2000-05

Relevant Projects

Please note that these are the projects considered **most relevant** to the recipient of this CV. These projects are related to the engineering area. Many other projects, including those related to advanced high level software development, were left out to keep it brief.

Feature-based image classification: Developed an image classifier structure to identify objects in a scene. It used sparse feature descriptors (SURF) located using an affine feature detector (MSER) to construct a “bag of words” and compare new images to the existing vocabulary. It was a simplified version of the “PASCAL Visual Object Classes Challenge 2006”. *Universitat de Girona.*

Motion estimation from MPEG: Developed an algorithm to extract motion vectors from an MPEG stream and use them to estimate camera motion. The algorithm was applied to estimate the motion of an underwater robot with a downward looking camera. *Heriot-Watt University.*

Road Sign Recognition: Developed an algorithm to recognize traffic signs from a moving car. It was able to detect triangular and octagonal signals. The optimal parameters were selected using genetic algorithms. Two more algorithms were also implemented to be compared with the new algorithm. The code was optimized to be executed on real-time video. *Siemens VDO*

Extended Depth of Field Research: Participated in a research project that dealt with artificial vision in microscope images. Helped in the development of an algorithm to fuse several microscope images to produce an Extended Depth of Field. *ITCR*

Skills

Main strength

Very fast learning skills. In fact, two of the most relevant jobs (Tecnosistemas and Intel) dealt with self-learning new technologies as they emerged. Fast software development skills in both, high and low level tasks.

Main weakness

In the past it has been complicated to work in teams due to my fast pace. Tasks must be carefully planned and responsibilities clearly divided for me to feel comfortable with a team assignment.

Personal Data

Date of birth: April 21st, 1982, San José, Costa Rica.
Nationality: Costarican
Languages: English, Spanish, and German fluent, basic French
Marital Status: Single