

Expertise Ben Vaessen

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Owner and Software Engineer at Launch IT
Developer of technical information systems
Born on August 4th, 1980

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Launch IT

*C#, Embedded
C/C++, VB, .Net,
PHP, SQL, XML,
CSS, SVN, SICK
IVC 3D, Agile,
ActivePerl*

Machine Vision

*PPT, VPM, CPM,
IMPACT, SICK IVC
3D, Feasibility
Studies*

Nuclear Fusion

*Real-time, FPGA,
DAQmx, National
Instruments,
Labview, HDF5,
Apache, CVS,
AWG, XPORT,
RS232, ECRH,
CXRS, TS, TelNet,
CAMAC, VME, C,
C++, IDL, TSM,
UNIX, Windows,
MS-DOS, English,
German, Dutch,
HTML, CSS,
Network, PC admin,
Emacs, VI, B&R
PLC, Servo and
Motion Control*

- Launch IT offers combinations of knowledge, software and hardware and is specialized in technical information systems.
- Several projects and activities using C#, VB, .Net, Embedded C/C++, PHP, SQL, CSS, XML, ActivePerl and SICK IVC 3D.
- Developing various own web-enabled products, such as DiagnoseIS: a combination of hardware and software supporting (neuro-) psychological testing. The system is connected to a database using SQL, XML and PHP for interfacing.
- Developed a track and trace algorithm for handling 3D machine vision inspection results.
- In partnership with SEF-Vision, developed IVC-GUI: a universal user interface for SICK 3D inspections.
- Designed and implemented the microcontroller firmware, written in C, for an industrial induction heating device, including the user interface and several control loops.
- Among other projects, hired as code reviewer for assessment of design, code and documentation, as well as monitoring and steering progress of a C++ microcontroller project at an electronics company.
- Assisted in debugging in pair programming sessions on a networked microcontroller project.
- Studying Agile Software Development and Project management in general. Using Test-driven programming for one of my projects. Using Subversion (SVN) for Version Management
- Responsible for feasibility studies using PPT Vision Systems, prototyping in Impact CPM and VPM programming environments.
- Programmed several programs for machine vision and installed these at the customer's location, mainly in Germany.
- Also worked with SICK IVC 3D software and hardware and barcode scanners.
- Have been responsible for almost 3 years for the control systems of two processes at an experimental nuclear fusion reactor and was first line support officer for a third process. These processes are Electron Cyclotron Resonance Heating (ECRH), Charge Exchange Recombination Spectroscopy (CXRS) and Thomson Scattering (TS), which are installed at the reactor called TEXTOR, at the Forschungszentrum in Jülich.
- Designed and prototyped software for a proof of principle FPGA controller by National Instruments for real-time detection of phase differences in a plasma, for detecting Magnetic Islands.
- Specified, designed, implemented and tested a 32 channel Data Acquisition System (DAQmx, National Instruments), including triggering, timing, the user interface, training to other personnel and integration into a Web Server using HDF5 data files.
- Integrated and improved the Human Machine Interface for a servo system into the overall user interface in Labview, using a RS232 connection to the servo controller. Followed a course on Motion Control.
- Created the remote human machine interface in Labview to an Arbitrary Wave Generator (AWG) written in FPGA using XPORTs for conversion from RS232 to Ethernet using the telnet protocol.
- Part-time Operator of the ECRH gyrotron, an 800.000 Watt microwave system, including cryogenic cooling. Built several electronic circuits for monitoring and controlling cryo cooling and pumps.
- Replaced the homemade Timing System for triggering and timing 4 cameras for CXRS (Princeton, Pixis and other camera brands) with a central CAMAC system in order to integrate it with the overall timing system for the reactor.
- Reviewed and debugged a B&R PLC used in ECRH for Interlocks, Interrupts and controlling subsystems, written in C++.
- Support for a VME system used for Data Acquisition and Timing,

which is written in C++.

- Made many improvements and rewritten several parts of a Thomson Scattering analysis program written in RSI IDL. Integrated the data analysis output with a web server and trained and supported the users on this subject.
- Integrated all source code and documentation in a Concurrent Version management System (CVS), wrote documentation on this subject and trained various users. Also installed TSM backup software for central data storage on all machines.
- Integrated a 4th camera in an existing control system for CXRS using Labview. Later, almost completely rewritten the code for the control system to better integrate 2 frame grabber cards running under MS-DOS, 1 frame grabber card under Windows NT and an USB 2.0 connection to the 4th camera with an internal DAQ, operated on Windows XP. Implemented error handling, integration with a web server serving FITS files, integration to the central timing system and more.
- Designed a Labview subroutine for automatically reporting bugs and problems to a central bugs database in order to professionalize bug and problem handling.
- Designed, implemented and Integrated a HDF5 web server into an Apache Webserver (Tec Web Umbrella, TWU) for general purpose, written in C++ on UNIX using Emacs and VI as editor.
- Designed a dynamic calibration process for calibrating 16 ECE (Electron Cyclotron Emission) channels and uploading this data to the central Web Server, implemented using C.
- Built a website using HTML and CSS for centralizing all documentation.
- First line support for network and PC problems in a team of about 15 people in a very international group mainly speaking English, Dutch or German.

Rockwell

*Microcontroller,
8051, C++, Borland
Builder, UML,
encoders, LVDT*

- In a group of four, designed and implemented a hardware/software combination for measuring the hardness of metals. Using C++ on a 8051 microcontroller, with an LCD screen and a couple of buttons electronically wired to the microcontrollers as a user interface. Used both encoders and LVDTs as sensors. First prototyped the concept using Borland C++ Builder. Designed in UML.

Classic Imaging

*Borland C++
Builder, LMD tools*

- Improved a software package for a medical echo scanner used for veterinary inspections, written in Borland C++ Builder and a large set of additional objects (LMD tools). Corrected about 50 bugs in a team of two software engineers.

RWTH Uniklinik

*UNIX, C++, DirectX,
Visual Studio, real-
time, Image
enhancement,
German*

- Designed real-time software at the institute for Medical Informatics at the university hospital in Aachen to automatically detect the Region Of Interest by fitting an ellipse using the histogram of images collected with an endoscope, automatically correct or warn for blooming and saturation problems, improve contrast in the HSV color domain with several self programmed filters, first under UNIX, later using DirectX and C++ in Visual Studio.

Service

System administr.

- For many years, regularly composed, updated, repaired, installed and advised on hardware and software for individuals or small companies.

Hobby projects

*Basic, Electronics,
Pascal, Assembler,
Visual Basic*

- *Lightsome Light*: As a hobby project, developed the software and hardware for an automatic light jockey: a system that steers a light show based on the sound input. Started this in 1991 using GW-Basic with 8 channels, experimented in the years thereafter with Visual Basic using the Sound Card for input. Later, rewritten the software in Pascal, using Assembler code snippets for some subroutines. The hardware was upgraded to 16 channels and 2 wireless channels for controlling 240V lamps. Designed and built a sound rhythm detection module and Beats Per Minute Counter using electronic components, opto coupled to the computer.

*SWISH, PHP, SQL,
Video filming and
editing, online game
programming*

PHP, SQL

C++

Excel, Visual Basic

*3D, Matrix
transformations,
Delphi*

*Borland C++
Builder, HTML,
databases*

- *Weblog*: Created an own weblog complete with it's own administrator site written in PHP and SQL. Also made some Flash-like applications with SWISH that communicated with the PHP and SQL scripts on the server, such as homemade games like a scrabble variant and a chat-bot. The weblog contained self-filmed and cut videos and photo shopped images and was updated daily for about two years.
- Prototyped an innovative web shop concept, designed in PHP and SQL, using Notepad++ as editor.
- Prototyped a program for watering and fertilizing land in the agricultural sector using C++.
- Programmed interactive Excel sheets for evaluating psychological tests using Visual Basic script.
- *iMap*: Another hobby project resulted in a 3D mapping tool, that can be used for brainstorming or mapping any other object. The code was written in Delphi, using matrix transformations for the 3D imaging.
- *WebSpider*: a program in Borland C++ Builder to automatically extract links out of HTML pages and insert them into a database and recursively search them again.