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Menno RUBINGH (M.Sc.),

- **Technical-mathematical software designer / Scientific programmer (focus C++)**
- **R&D software developer**
- **Algorithm developer**
- **Technical writer for algorithm documentation**



Software R&D Services for Innovative Small and Midsize Business

I am a one-man engineering service provider, available everywhere in Germany, the Netherlands, and the neighbouring countries, freelance on an hourly basis.

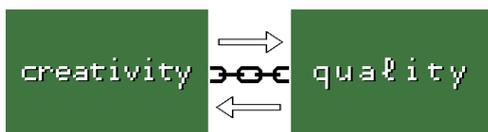
Mission statement: My aim is to be of service above all to small and medium-size firms, in the technical and industrial sector. By my availability on a temporary basis as an experienced R&D software developer, my goal is to open up additional possibilities to these firms for their software development, against conditions that are affordable even for small firms and startups.

What I can do for you

Skills and Vision

My strongest skill is **the creative process of moving from a vaguely formulated problem to a working technical solution**. That is: to understand and analyze new technical/algorithmic problems, and then to develop this analysis into a working and well documented prototype (including its hardware-near implementation). I am very strongly motivated by problems that are new to me, and I familiarize myself with new topics very quickly.

Creativity as I understand the term always stands in the context of the concrete problem, and includes: out-of-the-box thinking while finding approaches for solutions; thinking in concepts that are general and that can be mutually combined; and "engineering" (combination/adaptation) of algorithms and data structures to adapt them to the specific problem.



Very important for me is the **quality** of the developed software. Quality means not only that it works, but also that the software is structured in a clear and robust way, and that the software is accessible for modification and extension. **Robustness** means: algorithms that are 100% clearly understood, an architecture using narrow-interfaced modules that can be tested separately, and testing of the software on real-world cases. **Accessibility** means that the software is structured cleanly, and that the design and the algorithms are documented clearly.

In my view, the essence of engineering consists in **making the connection between creativity and quality**. For my customers I can ensure both, and their connection.

Services offered

Software structure & algorithm design

- Ferreting out new possibilities and following these up to the creation of working prototype systems
- Engineering of the concrete algorithms and data structures needed for the usage possibilities envisaged by the client
- Improvement of the structure and organization of existing code, to make it more maintainable
- Design of software components that are: platform-independent, maximally bug-free, and clearly structured
- Development of software tools.

Software documentation

Writing of texts that

- convey insight into the underlying logic, mechanisms, and algorithms used in a piece of software
- give an overview over the internal design of a piece of software
- make the connection between the underlying design and the actual source code.

A selection of the projects delivered by me

(Numerical) Mathematics and Physics Simulation

- Development 3D-kernel for CAD programs (for DAKO, Jena)
- Infrared-contrast computation for navy ship (for TNO-FEL, Den Haag)
- Computation of charge distribution in SiGe MOS transistors (for DIMES, TU Delft)

Image Processing

- Real-time industrial image processing on DSP (for Wente-Thiedig, Braunschweig)
- Prototype software for image association (for im-brain, Dortmund)

DSP/Microcontroller

- Real-time industrial image processing on DSP (for Wente-Thiedig, Braunschweig)
- DSP software development for radar driver assistance system (for ADC, Lindau/Bodensee)

Artificial Intelligence

- Development of text-association kernel for spam filtering (for im-brain, Dortmund)
- Anomaly detection for computer security (for CONSUL, Delft)
- Supervised learning for language processing (for Univ. Jena)

Software Tools

- Parser and interpreter for a new scripting language (for DAKO, Jena)
- Reimplementation of an IC timing model conversion program to new data structures (Philips Research, Eindhoven)

Software Documentation

In general, the projects listed above were delivered by me with extensive documentation. The following are projects that have consisted mainly of writing documentation:

- Architecture and design documentation for DSP software for driver assistance system (for ADC, Lindau/Bodensee)
- Programmer's Guide for C++ library for smart camera (for Basler, Ahrensburg)
- Algorithm documentation for a C program for interpolation of river and marine depth measurement data (Ministry of Water Management, Den Haag)
- Documentation for a military simulation installation (for e.sigma, München)

Legend: ■ as freelancer ■ via engineering service provider ■ partly as freelancer ■ as employee

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