



CAMPUS OF
INTERNATIONAL
EXCELLENCE

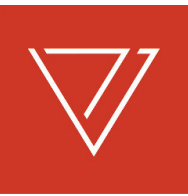


APPLICATION FORM: GLOBAL TRAINING PROGRAMME – INTERNSHIP INFORMATION

CORPORATIVE INFORMATION	
Name of the company	
Bright Red Systems GmbH	
Contact Person	
Dipl.-Ing. Thomas Jerman	
Location	Country
	City
	Address
Sector	
Research and Development of laser based optical measurement systems, including embedded systems and electronics	

PROPOSED INTERNSHIP INFORMATION	
Number of trainees to host	
1	
Extension time (extra months and salary) OPTIONAL	Extra months (2, 3 or 4 months)
4	
<u>SEE DOCUMENT:</u> "FORM 2_Global Training 2015 extension preliminary agreement"	Monthly payment for extra months (between 0-1024€/month)
1124 €/month	

INTERNSHIP/PLACEMENT INFORMATION	
Department (in case you want more than 1 trainee, indicate the different departments where they will work)	Research department and department for product development and testing, led by Dr. Robin Priewald.
Description of project/activities (in case you want more than 1 trainee, indicate the different projects/activities on which they will work)	For the development of a new type of 2D precision laser measurement system (laser scanner), tasks described in the attached profiles need to be addressed by two trainees, preferably a Masters level graduate of Electrical Engineering and a Masters level graduate of Software Engineering, or similar.
COMPETENCES, SKILLS and EXPERIENCE REQUIREMENTS	
Requested profile(s) information (Studies, previous experience, language skills, other skills...)	See detailed profile descriptions on the following pages.
Other commentaries	



Profile Description

Embedded Systems Engineer

For the development of a new type of 2D precision laser measurement system (laser scanner), the following tasks need to be addressed by a suitable individual, preferably a Masters level graduate of an Electrical Engineering degree, or similar.

Tasks:

- Programming of algorithms and routines for precision laser measurement into an embedded system based on an ARM Cortex A9 multicore application processor, running a low-level realtime capable operating system (RTOS), using C/C++ as programming language. Routines that need to be implemented comprise basic communication interface commands to configure the laser scanner (using Ethernet, USB, or UART), the implementation of existing CCD/CMOS sensor array signal analysis functions, mathematical matrix algebra routines and calibration procedures, as well as implementing and testing new experimental algorithms.
- MATLAB serves as a development platform for rapid creation and verification of algorithms. Using this platform, C-code can be generated, which has to be adapted and optimised to be included into the embedded system. Speed of code execution, the optimal usage of the available mathematical SIMD coprocessors and the multicore architecture, and real-time responsiveness are the key criteria.
- New algorithms and implementations need to be tested for performance and reliability, which is done using a precision coordinate machine for data collection, and processor-in-the-loop (PIL) testing.
- Embedded system programming requires some basic understanding of the underlying electronic hardware, and debugging with electrical measurement devices such as e.g. a digital oscilloscope.
- Producing and maintaining a structured and detailed development documentation of the steps above.

Requirements:

- Very good programming skills in C/C++ for embedded systems
- Very good programming skills in MATLAB
- Capability of analytical thinking, tracing cause-and-effect chains, and ability to deal with abstract tasks
- Flexibility, capability of working independently on own initiative, structured and organised
- Good command of English, spoken and in writing (alternatively, German), and good communicating skills

Beneficial / Nice-To-Haves:

- Experience with embedded programming and real-time operating systems
- Experience with ARM Cortex A application processor family embedded systems
- Experience with electronic circuits and laboratory equipment
- Knowledge of the concepts of version control (Git and GitFlow)
- Experience with ARM DS-5 or Keil MDK, Doxygen, SourceTree
- Enthusiasm for electronics and engineering problems, enjoying the feeling of seeing virtual code doing actual real things on the target hardware