PFC a Empreses (Tardor 2012-13)

✉ 🖨

Empreses i Institucions que ofereixen projectes a l'ETSETB i que gestiona l'escola
Última actualització: 20 de febrer de 2012

Quan demaneu una plaça mitjançant l'Intranet, ho haureu de fer en referència al codi que surt a la taula.

ATENCIO: hi ha empreses que continuament estan ofertant projectes. Un dels requisits és que els has de sol·licitar pel teu compte, però pots demanar-nos qualsevol document que et sol·licitin i tingui a veure amb l'escola. Consulta aquí quines són.

Bell Laboratories

Philips Research Europe

Nokia Siemens

TriaGnoSys GmbH

Thales Nederland Land & Joint BV

ETH Zurich

Continental, A.D.C. GmbH

DLR – German Aerospace Centre, Institute of Communications and Navigation

NXP Research

Bell Laboratories

Bell Laboratories (Alcatel●Lucent). NJ, USA

Codi	USA ALCATEL-LUCENT_NJ_1
Data d'entrada	03.02.12
Tipus d'estada	PFC

Descripció	**High Capacity Fiber-Optic Transmission Systems**
	
	Introduction and Short description
	
	Company: Bell Laboratories (Alcatel-Lucent) www.bell-labs.com
	Bell Labs has helped weave the technological fabric of modern society. Since its founding in 1925, technology from Bell Labs has shaped the ways people live, work and play. Over the past 80 years, the Bell Labs R&D community has made seminal scientific discoveries, created powerful new technologies, and built the world's most advanced and reliable networks. Here are some Bell Labs innovations that changed the world: The Transistor (1947), Shannon's Information Theory (1948), Laser (1958), Communications Satellites (1962), The CCD (1969), Unix Operating System and C Language (1969-1972), Digital Signal Processor (DSP) (1979), Optical WDM systems and networks (1990), First 100G Ethernet transmission (2005).
	
	Project
	
	Fiber-optic communications are evolving from simple intensity modulation with direct detection systems towards sophisticated multilevel modulation with coherent detection. Furthermore, digital signal processing techniques are also under development to overcome the main limitations given by transmission impairments. The scope of the project is to investigate on advanced modulation and detection schemes to exploit the huge capacity of an optical fiber. Some scientific references on the topic are:
	- Peter J. Winzer, "Beyond 100G Ethernet", IEEE Communications Magazine, vol. 48, no. 7, pp. 26-30, July 2010.
	- René-Jean Essiambre, Gerhard Kramer, Peter J. Winzer, Gerard J. Foschini, Bernhard Goebel, "Capacity Limits of Optical Fiber Networks", IEEE-OSA Journal of Lightwave Technology, vol. 28, no. 4, pp. 662-701, February 2010.
	
	Location:
	    791 Holmdel-Keyport Rd., Holmdel, NJ 07733, USA
	    http://maps.google.es/maps?hl=es&tab=wl ☐ 40.390736,-74.1866
	    70 Km from Manhattan (New York City) www.nycgo.com
	    Public Transport www.njtransit.com
	    Newark Int. Airport www.panynj.gov/airports/newark-liberty.html

Inici	December 2012 to February 2013 (flexible)
Durada	6-9 months
Requisits	Fiber-optic communications, digital communications, signal processing, laboratory skills, Matlab simulation, excellent academic records, good English knowledge.
Nombre de places	1
Compensation	a compensation will be given

Philips Research Europe

Philips Research Europe – Eindhoven. The Netherlands.

Codi	NL Philips Ein_1
Data d'entrada	26.01.12
Tipus d'estada	PFC
Descripció	**Computational Techniques for LED Optical Microcavities** Description The Philips Research Solid State Lighting group is searching for graduate and undergraduate students willing to contribute to the solid state lighting revolution. The student/s will work in a high tech industry facility together with a professional research team of electrical engineers and physicists. The proposed area of investigation deals with numerical methods and computational techniques to model the processes of light extraction in power LED (Light-Emitting Diodes) devices. An optics model of thin film micro-structures ought to be developed, tested, and experimentally validated. The student will have the opportunity to closely work with a team working on advanced multiphysics LED models to guide us in the understanding of a number of exciting fundamental physical mechanisms. Context Solid state lighting technologies are among the most prominent innovations influencing the way in which we improve our future by reducing energy consumption. So much so that the current 20% of the world's electricity consumed by lighting can potentially be reduced to 4% with the full-scale adoption of LEDs.
Inici	July 1
Durada	Until December 31 (or earlier); extension possible
Requisits	- Good programming skills - Good mathematics skills, particularly, numerical methods for solving PDEs (frequency and time domain) - Good knowledge of Maxwell's equations - LED device physics knowledge - High motivation and good English (written and spoken)
Nombre de places	1
Compensation	a compensation will be given

Codi	NL Philips Ein_2
Data d'entrada	26.01.12
Tipus d'estada	PFC
Descripció	**ADVANCED LED DRIVERS** The Philips Research Solid State Lighting group is searching for graduate and undergraduate students willing to contribute to the exciting solid state lighting revolution. The student/s will work in a high tech industry facility together with a professional research team of electrical engineers. The student/s will closely work with the research team to fundamentally analyze a number of novel converter topologies suitable for offline drivers. Context Solid state lighting technologies are among the most prominent innovations influencing the way in which we improve our future by reducing energy consumption. So much so that the current 20% of the world's electricity consumed by lighting can potentially be reduced to 4% with the full-scale adoption of LEDs (Light-Emitting Diodes).
Inici	July 1
Durada	Until December 31 (or earlier); extension possible
Requisits	- Good knowledge in power electronics - Good knowledge in circuit theory and circuit simulation tools - Practical skills to set up and measure circuits - High motivation, teamwork, good English (written and spoken)
Nombre de places	1
Compensation	a compensation will be given

inici de pàgina

Nokia Siemens

Nokia Siemens, Aalborg. Denmark

Codi	DK NSN Aal_1
Data d'entrada	26.01.12
Tipus d'estada	PFC
Descripció	**Multi-system aggregation strategies for Heterogeneous Networks combining WiFi and Beyond 4G systems** In this project, the students are supposed to investigate how to integrate the WiFi systems, at the Radio Access Technology level, with Beyond 4G cells (typically femto/pico/micro/remote radio heads exploiting LTE-like air interface) in order to provide efficient usage of the unlicensed bands as additional/escape carrier for the Beyond 4G system. Such modifications to the WiFi standards and Beyond 4G concept design could include (but not limited to) load balancing, spectrum flexibility, scheduling, and radio resource management in general.

Inici	September 3, 2012
Durada	8-10 months
Requisits	Good background on wireless communications, including understanding of medium access and transmission issues in wireless, good system level understanding, C++ programming skills
Nombre de places	2
Compensation	a compensation will be given

TriaGnoSys GmbH

TriaGnoSys GmbH, Wessling-Oberpfaffenhofen. Germany

Codi	D TriaGnoSys Wess-1
Data d'entrada	06.02.12
Tipus d'estada	PFC
Descripció	**Evaluation of an air-ground LTE network for Air Traffic Management (ATM)** Background The Long Term Evolution (LTE) is the latest mobile cellular communication standard developed by the 3rd Generation Partnership Project (3GPP). LTE uses OFDMA as a radio multiple access technology and it is considered by a large sector of the telecommunications industry as the standard on which future mobile voice/data connections will be based. During 2010, TriaGnoSys participated, together with other companies of the aeronautical sector, in a comparative study of wireless technologies capable of supporting the future air traffic management (ATM) services. This study, delivered to Eurocontrol's Single European Sky ATM Research (SESAR) initiative, highlighted the value of LTE for ATM communications via cellular air-ground (AG) links. Objectives 1. To support a TGS internal study on the technical feasibility of LTE-based air-to-ground aeronautical communication system, justified by system-level simulations of LTE air-to-ground networks, taking into account various system parameters, including: • Frequency plans • Scheduling mechanisms • Interference from other aeronautical systems • Safety spectral bands 2. To study and implement safety ATM traffic models to feed the simulator 3. To design an LTE system-level simulator interface for the support of arbitrary traffic models Methodology 1. Studying the LTE fundamentals 2. Learning how to configure and operate an LTE system-level simulator 3. Design & configuration of the simulations so that inter-cell interference is taken into account 4. Definition of the Key Performance Indicators of an LTE air-ground network and to quantify these from the performed simulations 5. Implementation of the traffic models Month 1: Study of LTE & system-level simulators Month 2-3: Implementation of traffic models, Initial simulations results, Mid-term presentation Month 4-5: Specification & design of traffic models interface, Final simulation results Month 6: Writing up, Final presentation
Inici	September 2012
Durada	The thesis shall be 6 months in duration.
Requisits	- OFDMA - Matlab, Octave or any other numerical analysis software - High english level - Basic knowledge of cellular networks
Nombre de places	1
Compensation	a compensation will be given

Codi	D TriaGnoSys Wess-2
Data d'entrada	06.02.12
Tipus d'estada	PFC
Descripció	**Preventing connectivity to ground LTE networks from airborne in-cabin UEs through steering of roaming** Background The Long Term Evolution (LTE) is one of the latest mobile cellular communication standards developed by the 3rd Generation

Partnership Project (3GPP). LTE is considered by a large sector of the telecommunications industry as the standard on which future mobile voice/data connections will be based. The core LTE specifications were frozen in 3GPP Release 8 during December 2008, although they continue to evolve in further releases. Among the long-term objectives of TriaGnoSys, the provision of on-board LTE connectivity to passenger and crew members is envisaged. In the future, this will enable the on-board wireless access to local content as well as off-board connection possibilities. Stable and reliable on-board LTE connectivity requires that on-board UEs connect to the on-board LTE network (i.e. the visited network from the UEs perspective) rather than to ground networks (i.e. the home network). Therefore, a method needs to be devised to guarantee that on-board UEs remain connected to the on-board visited LTE network.

Objectives

1. To learn about the Public Land Mobile Network (PLMN) selection procedure in LTE.
2. To learn Steering of Roaming (SoR) techniques and how to implement them.
3. To design one or more SoR-based methods to avoid connectivity to ground networks from airborne UEs.
4. To investigate the implementation feasibility of the proposed solutions.
Methodology
1. Studying the LTE fundamentals.
2. Studying SoR techniques.
3. Researching existing similar approaches to LTE SoR.
4. Analyzing the ground-connectivity problem from an LTE perspective and proposing solutions through SoR or other techniques.
The work will be carried out with the support of a supervisor. Adaptations to the methodology and objectives described above, as well as flexible reaction to lessons learnt while performing the work might occur.
Month 1: Study of LTE & SoR, Literature review
Month 2-3: Continued literature review, Proposition of draft techniques, Mid-term presentation
Month 3-5: Continued literature review, Refinement of proposed techniques
Month 6: Final draft of techniques, Final presentation

Inici	September 2012
Durada	The thesis shall be 6 months in duration and includes writing a self-contained scientific report (diploma thesis) in English, comprehensively summarizing the work performed.
Requisits	- Analytical & problem-solving skills. - Mathematical thinking. - High English level. - Basic knowledge of cellular networks (desired).
Nombre de places	1
Compensation	a compensation will be given

Codi	D TriaGnoSys Wess-3
Data d'entrada	06.02.12
Tipus d'estada	PFC
Descripció	**Efficient Database Synchronisation over Satellite for Management of Disaster Events** Context and Background This diploma thesis is based on the system designed in the research project "e-Triage" supported by the German Federal Ministry of Education and Research and aiming at facilitating emergency communication in the situation of a mass casualty incident (MCI) by providing digital communication and input devices replacing paper-based triage systems (http://www.triagnosys.com/e-triage/). The triage consists in classifying the victims depending on the severity of their injuries by means of colours. Nowadays this is done using paper tags that are hanged on the body and the information is distributed to hospitals by telephone calls. In e-Triage all the triage information as well as the registration of victims is saved in a database and distributed immediately and electronically to hospitals and control centres. In case of a disaster event, the terrestrial commercial communication networks are likely to be overloaded, damaged or not operative, if they ever existed. In order to provide reliable communication means to the rescue forces a fast deployable network is foreseen. This network offers GSM, TETRA and WLAN connectivity for the rescue personnel in the area and backhauls over satellite the whole voice and data traffic to a disaster-safe area. In the general case, several of such rapid deployment units will be on the field, with a number of end user terminals accessing them in heterogeneous ways to upload triage data to the distributed databases hosted on the units. The 'backbone/backhaul' network itself is dynamic in its topology and presents a highly complex situation for the synchronization of database information in the whole emergency communications network. Based on lessons learnt from preliminary implementations and tests, several areas for required or appealing further improvements have been identified. One of these is the transmission of the database traffic over satellite, which currently needs too much time and sends too much traffic through an expensive link with high latency. At the moment TriaGnoSys is already studying possible solutions to this problem, some of which will probably be integrated forming a complex process. It is foreseen that the final solution includes different processes to synchronize the database, and each of them is used in different moments or places according to a multiple-criteria decision metric (criteria are for instance bandwidth available, amount of new information to be transmitted, etc). Some components of the integrated process for database synchronization include: - CPISync (a specific database synchronization algorithm) - SlowSync (a specific database synchronization algorithm) - PEPs and/or multiplexing and compression - Encryption as a way of integrity check, instead of acknowledges for each of the updates - Integrated replicator systems in the database itself Statement of Work: The main task of this Diploma Thesis consists in implementing a part of the integrated solution to transmit the database related traffic over satellite with the minimum time and bandwidth possible. The concrete work to be performed will be defined during the first half of 2012 when the ongoing theoretical study is finished. It will include some of the following work: - study the statistical characteristics of the chosen solutions by simulating the behavior in Matlab; - provide new ideas or improvements to the solutions given;

	- implement selected components of the integrated solution, depending on a systematic priority list which will emerge from the ongoing conceptual studies and simulations; - write a self-contained scientific report (diploma thesis), comprehensively summarizing the work performed. The thesis is to be written in English. The work can base on some existing and documented framework of the ongoing project e-Triage. The project itself ensures timely opportunities to test the implementations of the thesis in a relevant environment and get valuable feedback on the achievements.
Inici	The preferred starting date is in summer/fall 2012.
Durada	The thesis should have a duration of 6 months.
Requisits	- Medium to advanced English language proficiency - Basic to advanced knowledge in C/C++ and other programming languages - Familiar with IP networking on Linux. A high level of commitment, engagement, and independent research capability are expected from the candidate performing this work; however, the challenge of the task can only be appropriately met by excellent team work, which shall be guaranteed by close contact and regular discussion among candidate and supervisor throughout the whole period.
Nombre de places	1
Compensació	a compensation will be given

Codi	D TriaGnoSys Wess-4
Data d'entrada	06.02.12
Tipus d'estada	PFC

Descripció	**Wireless Sensor Networks on-board Aircraft**
	
	Context and Background
	
	For operations and maintenance of future commercial aircraft, there is a significant potential for efficiency increase and cost reduction by using on-board Wireless Sensor Networks (WSNs) that could completely or partially replace current wired infrastructure. All prior work on WSNs in general is to be considered and assessed in the concrete scenario and the specific limitations encountered on board aircraft. In this diploma thesis an investigation of Medium Access Control (MAC) protocols for aeronautical WSN, in particular for implementations on a selected microprocessor, is to be performed.
	
	Statement of Work
	
	The concrete work to be performed includes the following (not preventing adaptations and flexible reaction to lessons learned while performing the work):
	
	• To study wireless sensor networks (WSN) in general.
	
	• To study the requirements for WSN implementation on aircraft. A reference list of requirements shall be provided during the thesis, a short list includes:
	
	    ○ Applications requirements
	
	    ○ Energy efficiency requirements
	
	    ○ Safety and eventually security requirements
	
	• To study various MAC protocol standards and optimisations in wireless sensor networks.
	
	• To perform a comparative analysis of the various protocol alternatives, and to decide which standard is the most suitable for implementation, with respect to the aeronautical requirements.
	
	• To search for available open source MAC protocol implementations, and to identify the potentially required modifications to fulfill the aeronautical requirements.
	
	• To implement, test, and document the adaptations identified to the open source software.
	
	The following two steps are the natural first and last tasks, respectively:
	
	• with support of supervisor/team, mostly self-organized training, background reading and literature survey capturing the state-of-the-art;
	
	• write a self-contained scientific report (diploma thesis), comprehensively summarizing the work performed.

Inici	September 2012
Durada	6-9 months
Requisits	Basic to advanced knowledge in computer networking (OSI, TCP/IP protocol stack, the different layers and their functions) is required. Basic to advanced knowledge in C/C++, discrete-event simulation, microprocessors is strongly recommended. Prior studies or thematic knowledge about WSNs or ad-hoc networks is welcome but not mandatory.
Nombre de places	1
Compensació	a compensation will be given

Codi	D TriaGnoSys Wess-5
Data d'entrada	06.02.12
Tipus d'estada	PFC
Descripció	**SANDRA Testbed** Context and Background The Single European Sky (SES) initiative is conducting a long-term air traffic management (ATM) transformation programme targeting the development of a modernised ATM system for Europe, for which the future communication infrastructure is key (cf. www.sesarju.eu). A core element of the future ATM are new link technologies to support the future data-centric ATM communication demands, including both direct air-to-ground (LDACS, AeroMACS), as well as satellite (e.g., Iris satellite). Airlines have a strong concern that the introduction of several new link technologies comes at the price of having to install a significant amount of new hardware on each aircraft, adding significant cost, weight and complexity of installation and maintenance. Therefore, integration of the hardware of the different link technologies into a single hardware platform is considered a highly interesting and promising topic. Against this background, the multi-national project SANDRA (www.sandra.aero), funded by the European Commission, investigates the integration of the aircraft communication systems on various layers. A core element of SANDRA is thus the development of an Integrated Modular Radio (IMR), which integrates several different link technologies in a single hardware platform, using techniques from Integrated Modular Avionics (IMA) and Software Defined Radio (SDR). TriaGnoSys is responsible for implementation of an Integrated Router (IR), another core element of SANDRA and the overall mobile IP airborne and ground networks. TriaGnoSys will further integrate and host the SANDRA high-fidelity aeronautical testbed to be used within laboratory and flight trials, which will comprise multiple link technologies (BGAN, DVB-S2, AeroMACS, and VDL2) and actual aircraft end-systems. There is a multitude of opportunities for interested students (internships, diploma), preferably with an communication or software engineering background, to participate in the development and integration of the SANDRA testbed and for performing tests in the SANDRA testbed, including flight trials, to investigate the future ATM networking technologies. Statement of Work The concrete works to be performed depend on the interests and capabilities, and, last but not least, the availability of the interested students. Generally, the first period of the work will be dedicated to background reading and understanding the challenges of the thesis. This will be followed by the main thesis work, which will typically involve lots of practical and implementation tasks, as well as design aspects. Some ideas and proposals are expected from the candidate. The work done will be implemented in the SANDRA IPv6 network testbed. At the end of the period the candidate is expected to write a self-contained scientific report (diploma thesis or internship report), comprehensively summarising the work performed. The thesis is to be written in English. The company supervisor will provide support and materials required for the candidate to perform his/her task.
Inici	September 2012
Durada	The thesis should have a duration of 5-6 months, with scope and level of detail of the studies to be adapted to the exact duration and skills of the candidate.
Requisits	Medium to advanced English language proficiency is required. Advanced knowledge in C/C++ is strongly recommended. Background in communication or software engineering is strongly recommended. Knowledge of Linux IP(v6) networking is recommended. Knowledge of scripting languages (e.g. awk, Perl, or Tcl) and LaTeX is welcome. A high level of commitment, engagement, and independent research capability are expected from the candidate performing this work; however, the challenge of the task can only be appropriately met by excellent team work, which shall be guaranteed by close contact and regular discussion among candidate and supervisor(s) throughout the whole period.
Nombre de places	1
Compensation	a compensation will be given

Thales Nederland Land & Joint BV

Thales Nederland Land & Joint BV. Huizen. The Netherlands

Codi	NL Thales Hui_1
Data d'entrada	07.02.12
Tipus d'estada	PFC
Descripció	**Energy Efficient routing protocol in personal wireless area networks** The goal of this assignment is to get to an implementation of an energy efficient routing protocol that is tailored to a specific personal wireless area networking device. In particular, the assignment will concentrate on extending the OLSR protocol to include the decision logic for selecting the most suitable transmit power and relay node for communication purposes, based on a proposed high level algorithm which takes the remaining battery capacity as a starting point. The following steps are distinguished in this assignment: 1. Analysis: based on the fact that there are messages transmitted at regular time intervals, how can (1) messages be combined, and (2) the routing protocol be designed, such that the number of attempts to access the radio transmitter are minimized. In addition to this, (3) the interface design between the battery and the routing module plays an important role. 2. Initial validation via simulation (e.g. using Matlab) 3. Implementation and validation of the optimized routing protocol on a selected platform. 4. If the validation shows a large improvement on the energy efficiency of the protocol over existing approaches, the implemented protocol should be made suitable for operating on a Thales-specific embedded system.

Inici	Summer/Fall (typically beginning of September)
Durada	6 months
Requisits	Programming in C/C++, Linux, TCP, IP, Communication Networks, Programming, telecommunication and datanetworking, Embedded systems
Nombre de places	1
Compensation	a compensation will be given

Codi	NL Thales Hui_2
Data d'entrada	07.02.12
Tipus d'estada	PFC
Descripció	**Disruption Tolerant Networking in Wireless Ad Hoc Networks** The goal of this assignment is to study and validate the application of a hybrid DTN / Ad Hoc solution that takes advantage of the reliability of a DTN protocol and the responsiveness of an Ad Hoc routing protocol. This includes conceptual and experimental work that should result in a demonstrator (using an existing testbed of wireless ad hoc networking nodes) that is capable of showing the merits of the approach taken.
Inici	Summer/Fall (typically beginning of September)
Durada	6-9 months
Requisits	Programming in C/C++, Linux, TCP, IP, Communication Networks, Programming, telecommunication and datanetworking, Embedded systems
Nombre de places	1
Compensation	a compensation will be given

ETH Zurich

ETH Zurich - Department of Information Technology and Electrical Engineering - Computer Vision Laboratory. Switzerland

Codi	CH ETH ZU_1
Data d'entrada	07.02.12
Tipus d'estada	PFC
Descripció	**Adapting Artificial Intelligent Algorithms for Encoding Images in FPGA Devices** It was discovered that in the visual cortex of the primates the images are encoded with neurons that consists of sets of selective filters of Gabor transforms. The neurons of this part of the cortex are the so called V1, and many artificial intelligent researchers were inspired by this biological observation to represent images for learning tasks in machine learning, such as object recognition. Moreover, using artificial intelligent techniques to learn filters to best represent images for recognition tasks, have shown that the obtained filters are Gabor like, similar to the V1 found in the cortex. In this project, our aim is to build an artificial intelligent system with FPGA's to be able to process images much faster than real time and taking advantage of the parallel structure that offers hardware, in contrast of software technology. In this way, we would be able to process the information in parallel and transmit data very fast in an embedded platform.
Inici	1st July (it is flexible)
Durada	6 months minimum
Requisits	Solid knowledge of VHDL language; Experience programming FPGA's in VHDL Solid knowledge of C++; Fluent in English, both written and spoken; Creative; Interested in research; Prior knowledge in the areas of computer vision are a plus
Nombre de places	1
Compensation	

Codi	CH ETH ZU_2
Data d'entrada	07.02.12
Tipus d'estada	PFC
Descripció	**Active Vision for Scene Understanding** Scene understanding has been one of the central goals in Computer Vision for many decades, and it is considered a key for the success of applications, such as autonomous driving and robot navigation. Existing approaches infer the structure of the environment based on images or video that are provided by an external source. Thus, the level of understanding of the scene is limited by the way the surrounding environment is explored, and usually cannot be controlled online. The principal objective of this work will be to address the problem of active scene understanding. This is, to carry out scene

	understanding, where the algorithm have a direct interaction with the environment. Our method will be able to decide where to look to improve its predictions and acquire more information from the underlying scene structure using artificial intelligent techniques.
Inici	1st July (it is flexible)
Durada	6 months minimum
Requisits	Solid knowledge of C++; Fluent in English, both written and spoken; Creative; Interested in research; Prior knowledge in the areas of computer vision are a plus.
Nombre de places	1
Compensation	

Codi	CH ETH ZU_3
Data d'entrada	07.02.12
Tipus d'estada	PFC
Descripció	**Real-Time Multi-Class Object Recognition in Images** Object recognition has been one of the main areas of research in computer vision for many years. Many advances have been made in this direction and very successful methods have been presented. They usually build a general model from given examples, and use this model to recognize a new instance of object that the algorithm never saw before. However, there is still the need for a robust technique that works in real-time able to recognize different object classes in an image. This comes from the fact that there are systems, such as autonomous navigation and gaming that require real-time systems. Our aim is to explore this direction and develop an algorithm that works at real-time and it is able to recognize different classes, such as car, dog, person, etc. and also sky, grass, building, etc. in an efficient and effective way.
Inici	1st July (it is flexible)
Durada	6 months minimum
Requisits	Solid knowledge of C++; Fluent in English, both written and spoken; Creative; Interested in research; Prior knowledge in the areas of computer vision are a plus.
Nombre de places	1
Compensation	

inici de pàgina 🔺

Continental, A.D.C. GmbH

Continental, A.D.C. GmbH. Lindau, Germany

Codi	D CONTINENTAL_Lin_1
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Design, Implementation and Evaluation of an efficient Polygonal Sign Detection Algorithm** Job Description: The Continental plant in Lindau (Lake Constance) is developing innovative Driver Assistance Systems for more comfort and safety. This project is dealing with the improvement of the false positive rate, i.e. the rate of non-road signs falsely classified by as road signs, of a recognition system for speed limit signs. Your Tasks: The Generalized Hough Transformation (GHT) can theoretically be used to optimally detect stop signs and give-way signs, but unfortunately it has a high computational load in his general form. The goal of this master thesis is thus to investigate alternatives to the previous approach which are less computationally expensive but have a comparable detection performance. In particular he/she shall is responsible for: - Implement a baseline algorithm for the detection of polygonal signs, - Assess its performance and computational load on real video data, - Design, implement and evaluate alternatives which improve the performance of the baseline - Write a report to summarize the results and conclusions
Inici	Fall 2012
Durada	at least 6 months
Requisits	Your are studying Electrical Engineering, Physics, Optics, Microsystems Technology, Automotive Engineering, Mechanical Engineering, Computer Science or comparable study paths. Your Skills: - Sound knowledge of Statistical Mathematics and Image Processing - Good communication skills in German and/or English - Good programming skills in C/C++ and Matlab, - Working knowledge of Office Tools (Excel, Word, etc...). - Driving license

Nombre de places	1
Compensació	

Codi	D CONTINENTAL_Lin_2
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Improving the False Positive Rate of Classifiers for Sign Recognition** Job Description: The Continental plant in Lindau (Lake Constance) is developing innovative Driver Assistance Systems for more comfort and safety. This project is dealing with the improvement of the false positive rate, i.e. the rate of non-road signs falsely classified by as road signs, of a recognition system for speed limit signs. Your Tasks: - Understanding the current implementation of the classifier for road sign recognition, - Search in the literature for methods to improve the false positive rate of classifiers, - Implement in C / Matlab the most promising alternatives, - Evaluate and statistically compare these alternatives using real road sign data, - Write a report to summarize results and conclusions.
Inici	Fall 2012
Durada	at least 6 months
Requisits	Your are studying Electrical Engineering, Physics, Optics, Microsystems Technology, Automotive Engineering, Mechanical Engineering, computer science or comparable study paths. Your Skills: - Sound knowledge of Statistical Mathematics and Image Processing - Good communication skills in German and/or English - Good programming skills in C/C++ and Matlab, - Working knowledge of Office Tools (Excel, Word, etc...). - Driving license
Nombre de places	1
Compensació	

Codi	D CONTINENTAL_Lin_3
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Image Processing and Data Evaluation of Sender Lens Test Station** Job Description: The Continental plant in Lindau (Lake Constance) is developing innovative Driver Assistance Systems for more comfort and safety. This project is dealing with an IR laser range sensor (LIDAR) which captures the environment of a vehicle in order to warn the driver or to initiate an emergency braking maneuver. In this context we are looking for a master thesis student for image processing, data evaluation and control of a camera based test station for the sender lens. Your Tasks: - Process the images of a segmented lens: - Detect edges between lens segments - Superpose all images for one segment - Find edges in image to calculate beam width and height for each lens segment - Design and implementation of user interface
Inici	Summer 2012
Durada	at least 6 months
Requisits	Your are studying Electrical Engineering, Physics, Optics, Microsystems Technology, Automotive Engineering, Mechanical Engineering, computer science or comparable study paths. Your Skills: - image processing - experience with Matlab/Simulink are advantageous - good language ability (English or German) - fast comprehension, analytic skills, creativity and team spirit
Nombre de places	1
Compensació	

Codi	D CONTINENTAL_Lin_4
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Design of Simulation Model for IR-Laser Sensor and Light Path** Job Description: The Continental plant in Lindau (Lake Constance) is developing innovative Driver Assistance Systems for more comfort and safety. This project is dealing with an IR laser range sensor (LIDAR) which captures the environment of a vehicle in order to warn the driver or to initiate an emergency braking maneuver. In this context we are looking for a master thesis student to design the theoretical model of a laser sensor and light path. Your Tasks: - Decompose sensor and light path in modules (e.g. emitter, lenses, target, receiver, amplifier) - Design and implementation of a Matlab/Simulink model for each module. - Design and implementation of interface to existing Matlab/Simulink data processing

	- Verification of simulation results
Inici	Summer 2012
Durada	at least 6 months
Requisits	Requirements: Your are studying Electrical Engineering, Physics, Optics, Microsystems Technology, Automotive Engineering, Mechanical Engineering, computer science or comparable study paths. Your Skills: - design of simulation models - experience with Matlab/Simulink are advantageous - good language ability (English or German) - fast comprehension, analytic skills, creativity and team spirit
Nombre de places	1
Compensation	

Codi	D CONTINENTAL_Lin_5
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Definition and Installation of Experimental Setup for IR-Laser Sensor** Job Description: The Continental plant in Lindau (Lake Constance) is developing innovative Driver Assistance Systems for more comfort and safety. This project is dealing with an IR laser range sensor (LIDAR) which captures the environment of a vehicle in order to warn the driver or to initiate an emergency braking maneuver. In this context we are looking for a master thesis student to define and setup a reference setup of the IR laser range sensor. Your Tasks: - Analyze existing LIDAR sensor - Decompose Sensor in modules (e.g. emitter, receiver, amplifier) - Setup of all modules on a test bench with accessible interfaces - Design and implementation of interface to Matlab/Simulink for sensor control and data acquisition - Compare results of experimental setup with sensor
Inici	Summer 2012
Durada	at least 6 months
Requisits	Your are studying Electrical Engineering, Physics, Optics, Microsystems Technology, Automotive Engineering, Mechanical Engineering, computer science or comparable study paths. Your Skills: - digital signal processing - experience with Matlab are advantageous - basic knowledge in electronics - good language ability (English or German) - fast comprehension, analytic skills, creativity and team spirit
Nombre de places	1
Compensation	

DLR – German Aerospace Centre, Institute of Communications and Navigation

DLR – German Aerospace Centre, Institute of Communications and Navigation, Oberpfaffenhofen-Wessling, Germany

Codi	D DLR Wess-1
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Development of a testbed for an optical satellite uplink** The Optical Communication Systems Group investigates new technologies to improve the performance of free-space optical links between ground stations and aircrafts or satellites. In the project OSIRIS (Optical Space Infrared Downlink System), the group is currently developing an experimental optical terminal which is intended to be used on a LEO satellite with launch in 2013. One part of the system is a novel optical uplink, which can be easily integrated into the system. Its low data rate (~Mbit/s) is still sufficient to greatly enhance the error correction schemes of the Gbit/s downlink. In the framework of this thesis, the transmitter/modulator for this system shall be developed, e.g. on the basis of a standard PC or a DSP. Furthermore, a receiver for lab purposes serving the functionalities of the satellite hardware shall be implemented. All components shall be lab-tested under simulated conditions in a test bed. Tasks: - Development and programming of Test-Tx & -Rx, based on a Microprocessor/DSP - Development of an opto-electronic test-bed - Exhaustive testing and optimization of the system
Inici	Summer 2012
Durada	6-8 months
Requisits	Study of Electrical Engineering, Informatics or similar
Nombre de places	1

Compensation	
Codi	D DLR Wess-2
Data d'entrada	14.02.12
Tipus d'estada	PFC
Descripció	**Evaluation of measurement data for an optical free-space aircraft to ground communication link system** DLR develops optical free-space communication equipment to enhance data rates for link between aircrafts and ground station. In order to optimise system performance the impact of atmospheric effects have to be evaluated for different flight conditions and link distances. Tasks: Processing of measurement data from different optical sensors in order to extract amplitude and phase information of the received field.
Inici	Summer 2012
Durada	6-8 months
Requisits	Matlab, Image Processing
Nombre de places	1
Compensation	

NXP Research

NXP Research. Eindhoven, The Netherlands.

Codi	NL NXP Ein_1
Data d'entrada	17.02.12
Tipus d'estada	PFC
Descripció	**Implementation of a Reverse-Body-Bias generator for ultra-low power systems.** Introduction: The framework of this assignment is a research project to develop a fully integrated Reverse-Body-Bias generator for ultra-low power systems. Reverse-Body-Biasing (RBB) is a wellknown silicon tuning technique to reduce power consumption in digital CMOS circuits. The technique consists in properly modifying the P-well and N-well voltages of CMOS digital circuits (normally connected to the power rails) in order to increase/decrease the threshold voltage of the transistors which results in a strong reduction of the power consumption (specially the leakage current). To implement Reverse-Body-Biasing two different voltage levels for the P-well and the N-well are required, being both of them out of the Vdd-Vss supply range (VPwell<Vss and VNwell>Vdd). The amount of power to be supplied to both wells is normally in the range of 10nW up to 10uW. Considering that the total consumption of the system under RBB application reduces down to levels close to those, the generation of the two voltage rails requires of high efficiency to avoid reducing the benefits of RBB. Obviously, it becomes a challenge to provide high efficiency at ultra-low power levels and for a range of 3 orders of magnitude. Since a full monolithic implementation is required together with a switched-mode power converter (in order to generate voltage levels out of the supply range), the solution is normally implemented by using switched-capacitor power converters. Assignment: Based on a previous existing design, the main task of the assignment is to implement a new and improved Reverse-Body-Bias generator. The design is to be implemented in 90nm baseline CMOS technology. In order to fulfill the assignment, system level as wells as transistor level simulations will be required to validate the new concepts and to verify the proper operation of the circuit in all the PVT corners. Though new concepts are to be applied, high reutilization of already existing building blocks is expected, allowing the candidate to focus in the improvement of the required converter itself and its performance. Depending on the skills of the candidate and the timing of the project, the assignment could also include the design of the layout, and eventually developing a test PCB board and evaluating the design experimentally.
Inici	September
Durada	9 months
Requisits	The main required skills for the candidate are: analog circuits design and simulation with advanced CAD tools such as Cadence, understanding of layout design (only required if layout is to be implemented during the assingment).
Nombre de places	1
Compensation	