

New high performance computing techniques for highly intensive processing of underwater sensors data



NICOLAS BAUDIN
INTERNSHIPS IN FRANCE INITIATIVE

Observatoire de Paris + Thales

Name of the hosting institution in France	Observatoire de Paris
Name of the host laboratory / research team	LESIA
Address	LESIA, Observatoire de Meudon, Avenue marcellin berthelot Batiment 12 92190, Meudon
Website	www.lesia.obspm.fr
Name of the supervisor	Damien GRATADOUR
Function	Maître de conférence (Associate Professor)
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Internship offer

Topic of the internship (title)	New high performance computing techniques for highly intensive processing of underwater sensors data		
Proposed dates of the internship	Start:	2019-09-02	End 2020-01-31
Scientific and academic objectives of the internship (detailed description of the internship content, work expected from the intern and expected outcomes):			
<p>The objective of this internship is to work on new high performance computing techniques, to be implemented on heterogeneous architectures, for highly intensive processing of underwater sensors data. The ultimate goal is to achieve extreme scale computing capabilities by taking advantage of off-the-shelf technologies available at industrial grade. The intern will study several variants of state-of-the-art high performance computing which today is a main worldwide concern. The benefits of this research must be clearly assessed: coping with new sensors demands with a SWaP optimized solution and using as far as possible available advanced technologies. The intern will focus on the field of efficient algorithms, new processing architectures and technologies to define the optimal trade-off. A set of benchmarks will be proposed to work out the solution within the constraints of underwater acoustic applications. The applicant will have access to both industrial use cases defined by Thales (located in Sofia-Antipolis French Technopole) and close interactions with researchers from the high performance computing team at Observatoire de Paris. The proposed monthly gross salary for the duration of the internship is 1250 Euros/month.</p>			
Name of industrial partner	Thales Underwater Systems		
Role of the industrial partner in the internship project	The partner will provide the intern with a characterization of underwater applications. It will lead the numerical experiments.		
Main contact at the French industrial partner	Pierre-Yves Toche		
Name of the Australian partner institution	Australian National University (ANU)		
Name of lab/department/team involved in the collaboration at the Australian partner institution	RSAA		
Main contact in the Australian partner institution	Damien Gratadour		
Function of the main contact in the Australian partner institution	Instrument Scientist		
Email address of the main contact in the Australian partner institution	dgratadour@gmail.com		
Outside of this ongoing collaboration, will applications coming from students of other eligible Australian universities be considered by the hosting institution in France?	Yes		

Expected profile of applicant

Level of study	Postgraduate / PhD
Discipline	Applied Mathematics, Computer Science, Electrical Engineering
Required qualities, knowledge and skills	High performance computing, numerical optimization, software programming