



International Research Experience for Students
US-France (INSA) Cooperative Research: Engineering Innovative Software Systems
with Applications to Maritime Transportation Logistics – YEAR 3



Applications are invited to participate in the 3rd year of the 3-year multi-disciplinary program for applied research opportunities in Engineering, Science, and Technology sponsored by the National Science Foundation at the University of Arkansas at Little Rock (UALR) in collaboration with the National Institute of Applied Sciences at Rouen (INSA de Rouen) in France.

Student projects areas include: (i) **Modeling and Simulation:** Model and simulate the routine and emergency response operations at individual ports, capturing high level details of port interactions and related processes that involve human intervention. (ii) **Virtual Environments:** Identify and model requirements for individual ports, port interactions and operator-related issues. Design and prototype an interactive, immersive virtual environment for visualization of port operations at UALR's Virtual Reality Center (VRC). (iii) **Information Security Protocols:** Formal analysis of interaction protocols that capture the interactions among the various actors in a maritime transportation logistics system such as port-port, container-port, container-container, container-ship, ship-port, etc. (iv) **Distributed Computing:** Model and analyze enabling mechanisms for different kinds of P2P information sharing technologies, identify their suitability for enabling the formation of container entities, and in general, their applicability to maritime applications. Research emerging technologies to facilitate both the creation of, and the collaboration among, ad-hoc container networks. (v) **Multifactor Authentication:** Approaches to deal with container security issues ranging from securing the contents of containers, tracking issues, and making sure their contents have not been accessed by an outside entity during transportation.



Rouen's Notre Dame Cathedral

- Called Rotomagus (during the Roman period)
- 911 AD: Capital of Normandy
- 1204 AD: Conquered by the King of France Philip II Augustus, became France's second largest city.
- 1431 AD: Joan of Arc executed.



Jeanne D' Arc

- Well connected to Paris, ~2 hrs away.
- One of France's major maritime transportation hubs
- Rouen hosts about 4000 ships / year.
- Biggest European port for cereals
- Biggest French port for flour, agri-foodstuffs, fertilizers, and paper products.

- INSA-Rouen: One of the five national applied science institutes for higher education and research in France
- More than 60 partnerships with the most prestigious schools and universities in the world.
- Laboratoire d'Informatique, de Traitement de l'Information et des Systèmes lab (LITIS): aggregation of four research laboratories across the Haute-Normandy region.
- Several researchers involved in studying various problems related to chemical, biological, agricultural, and transportation logistics industries.

Duration: 6 Weeks

Available Positions: 7

Total Stipend: \$3500.00 + Flight

Requirements:

- Undergraduate or Graduate students in good academic standing from Mathematics, Computer / Information Science, Engineering or related majors
- Must be U.S. citizens or permanent residents

Benefits:

- Exposure to joint applied research activities
- Work with experienced researchers in the field
- Stipend to cover travel and accommodation expenses. \$ 500 / week for 7 weeks plus up to \$1500 for travel.
- Visit some of the most beautiful and historically significant parts of France.
- Meet new people and make new friends

Application Deadline: Dec 4th 2009
Acceptance Notification by: Jan 11th 2010

Program Start Date: May 21st 2010
Latest Program End Date: July 12th 2010

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