



# PhD Position in Artificial Intelligence

## Graph based representation and reasoning for combinatorial auctions

---

*Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier (LIRMM)*

*Université Montpellier II*

---

The RCR (knowledge representation and reasoning) group at LIRMM, Montpellier, is looking for a highly motivated candidate for a three-year PhD position to investigate representation and reasoning aspects for combinatorial auctions.

Combinatorial auctions (CAs) can be looked at as a way of approaching allocation problems involving multiple heterogeneous goods. Bidding is the problem of representing one's valuation function over this set of goods on offer. The research project will focus on investigating a graph based approach for representing and manipulating bids for CAs from a representational and reasoning viewpoint.

The challenges of this work are twofold: (1) representation / reasoning (algorithms working on compact graphical representations are to be designed) and (2) reasoning / efficiency (structure of the represented bids can be used to characterize interesting complexity classes).

The candidate must have a master's degree in Computing Science or Applied Mathematics. The candidate should possess (1) strong analytical skills, (2) good knowledge of graph theoretical notions, (3) good knowledge of multi agent systems and (4) highly proficient skills in at least one major programming language.

Interested candidates should apply by emailing [croitoru@lirmm.fr](mailto:croitoru@lirmm.fr) **as soon as possible** (and no later than **25<sup>th</sup> of May 2009**):

- a letter of motivation with statement of research interests
- curriculum vitae
- master studies results