

We are looking for motivated and talented candidates for competitive PhD scholarships in artificial intelligence at Data61, CSIRO, Brisbane, Australia, to start in Southern Winter 2018.

Research group: Legal Informatics. Tutor: Dr. Regis Riveret.

## Description

Argumentation aims at supporting rational persuasion and deliberation in domains where no conclusive logical proofs are available. It addresses defeasible claims raised on the basis of partial, uncertain and possibly conflicting pieces of information. Argumentation has been a traditional concern for philosophy and legal theory since Aristotle and Cicero, but only recently has become a focus for research in Artificial Intelligence.

While argumentation-based reasoning enhances a system's ability to overcome defeasible determinations under conditions of uncertainty and conflict, most formal approaches to argumentation are unable to provide a comparative quantitative account of the persuasiveness of alternative conclusions.

Probability theory can help to fill the gap between qualitative and quantitative accounts of uncertainty. For example, probabilistic methods may propagate uncertainties over (clusters of) premises into quantified uncertainties concerning the dialectical acceptability of arguments and conclusions. For this reason, the combination of argumentation and probability has been given increasing attention in recent years, paving the way to new accounts of qualitative and quantitative uncertainty, and offering new theoretical and applicative opportunities.

In this context, non-trivial research problems regard: (i) the (efficient) computation of the probability of arguments' statuses given a background argumentative, (ii) learning the probability distribution of arguments' statuses from examples, (iii) learning an argumentative structure from examples or learning the 'best' structure fitting some constraints. We are seeking motivated and talented candidates to explore solutions to these problems.

## Requirements

Successful candidates should be highly motivated to pursue independent research. A background in mathematics, artificial intelligence or intelligent systems would be appreciated. IELTS score must be at least 6.5, with no subscore less than 6. Applications (letter, CV and academic transcript in pdf) must be sent to [regis.riveret@data61.csiro.au](mailto:regis.riveret@data61.csiro.au)