

# UCLA Philosophy

## Defeasible Inference in Philosophy and Artificial Intelligence

**Ulf Hlobil (Concordia University)**

**Title: “Reasoning First”**

**Abstract:** I present a view according to which the property of being a good piece of reasoning plays a central explanatory role. On the practical side, e.g., we can explain notions like “reason to act”, “permissible”, and “acting virtuously” in terms of good practical reasoning. On the theoretical side, the notion of good reasoning allows us to give an account of logical consequence. According to this account, logical consequence is merely a particular subset of a broader class of validities that are usually defeasible and material. This suggests a new approach to nonmonotonic logic that reverses the usual order of explanation. That reversal must, at first, seem unattractive to those who want to use nonmonotonic logics in the creation of AI. I point out some advantages of the approach.

**John Horty (University of Maryland)**

**Title: TBD**

**Abstract: TBD**

**Luc De Raedt (Katholieke Universiteit Leuven)**

**Title: “Logic, Probability and Learning : An AI Perspective”**

**Abstract:** An introduction will be given to probabilistic logic programming, an area within artificial intelligence that aims at integrating logic, probability and learning within a (logic) programming language. Three topics will be covered: 1) inductive learning of logic programs from examples, i.e., logic and learning as studied in inductive logic programming and relational learning; 2) semantics, inference and learning of probabilistic logic programming languages such as ProbLog; and 3) recent extensions of such languages for use in neuro-symbolic computation.

**Francesca Toni (Imperial College London)**

**Title: “Non-monotonic reasoning by computational argumentation”**

**Abstract:** Computational argumentation, as understood in AI, has strong roots within non-monotonic reasoning. I will show how a number of approaches to support non-monotonic reasoning, including logic programming and default logic, can be understood argumentatively, in abstract argumentation and assumption-based argumentation (two well know formalisms in computational argumentation), and what this understanding empowers in terms of cross-fertilisation and computation.

**Jared Millson (Agnes Scott College)**

**Title: “A Defeasible Logic for Zetetic Agents”**

**Abstract:** The study of defeasible reasoning unites epistemologists with those working in AI, in part, because both are interested in epistemic rationality. While it is traditionally thought to govern the formation and (with)holding of beliefs, epistemic rationality may also apply to the interrogative attitudes associated with our core epistemic practice of inquiry, such as wondering, investigating, and curiosity. Since generally intelligent systems should be capable of rational informative-seeking behavior, AI researchers have a natural interest in the norms that govern interrogative attitudes, or what I call zetetic rationality. In this paper, I draw on recent work in epistemology and nonclassical logic to argue that zetetic rationality can be modeled via defeasible inferences to and from questions, i.e. erotetic inferences. I offer a sequent calculus that accommodates the unique features of “erotetic defeat” and that exhibits the computational properties needed to inform the design of zetetically rational systems.