Overview

- First order logic
  - Representation (Lec. 8)
  - Inference (Lec. 9)
- Bayesian networks, uncertainty will be postponed to next week
- Final review will be provided next week

- Announcement:
  - Homework 6: optional
  - Course evaluation

Key concepts

- Basic elements: constants, functions, etc.,
- Atomic sentences (single claim) and complex sentences
- Universal quantification ∀: e.g., $\forall x : f(x) \wedge g(x)$
- Existential quantification ∃: e.g. $\exists x : f(x) \Rightarrow g(x)$
- Quantifiers property:
  - $\forall x \exists y : f(x, y),\ \exists y \forall x : f(x, y),\ \forall y \exists x : f(y, x),\ \forall y, \exists x : f(x, y)$
  - De Morgan rules: $\neg \forall x f(x) = \exists x \neg f(x); \quad \neg \exists x f(x) = \forall x \neg f(x)$