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Federica Di Stefano

Description Logics and Circumscription

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Description Logics and Circumscription

* Description Logics are fragments of FOL
* Circumscription — augmenting FOL with predicates minimization
    * Select models where the extension is minimal

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Circumscribed Description Logics

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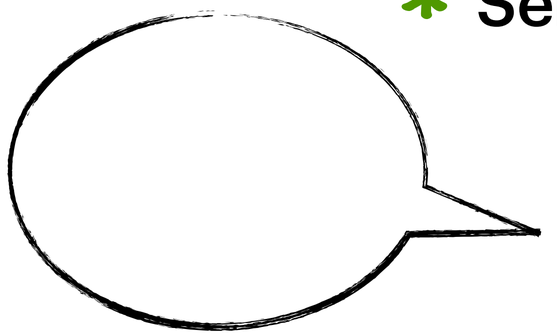

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Circumscribed Description Logics

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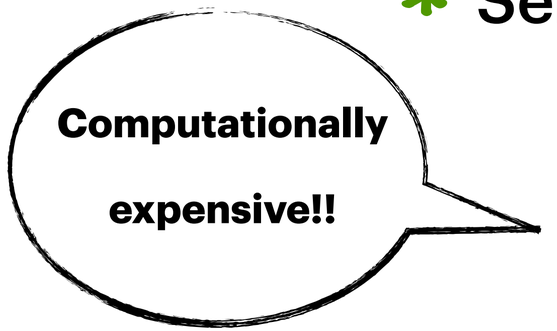

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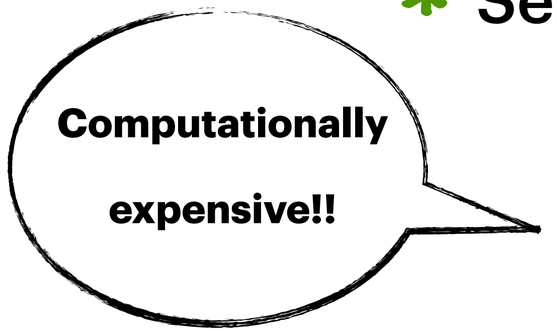

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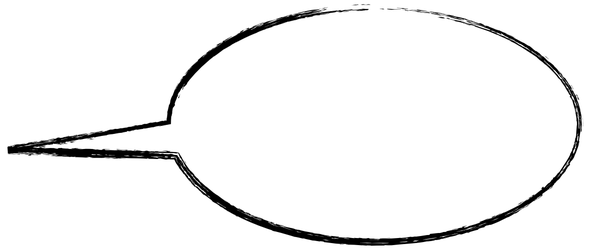

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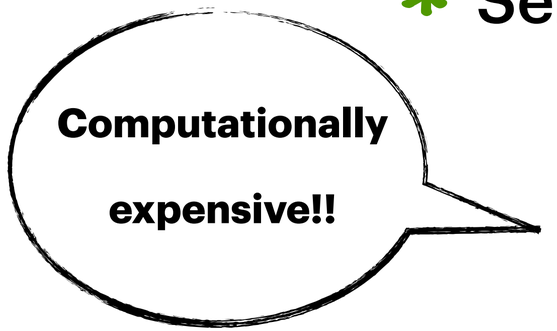

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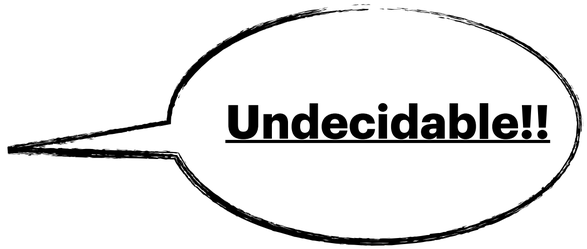

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Computationally expensive!!

↓

Circumscribed Description Logics

Undecidable!!

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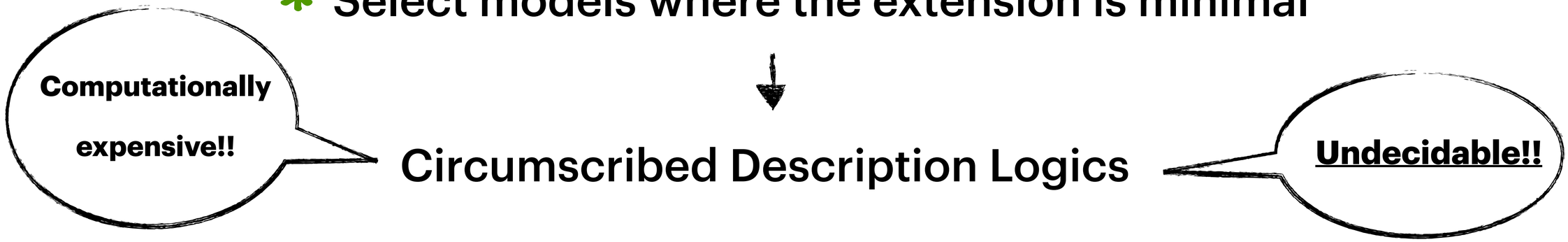

Circumscription-based non-monotonic extension of Description Logics

* Lowering the complexity
* Preserving usefulness for Knowledge Representation

Latest achievements

Latest achievements

☑ We introduced a semantics based on

Pointwise Circumscription

☑ Decidable where circumscription is not!

Latest achievements

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Next steps

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☐ Defeasible reasoning

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"Users, that are not **abnormal users**, cannot access confidential files."
"Staff members, that are not **abnormal staff members**, can do it."

Steve has access to confidential files and is an abnormal user.

Thank you for the attention!