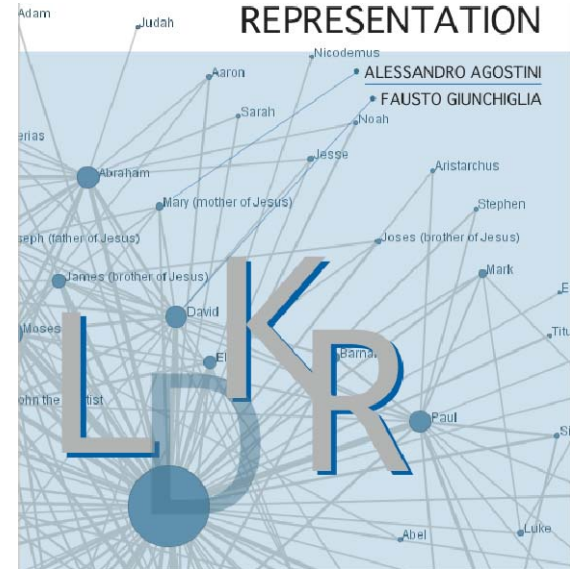




LOGICS FOR DATA AND KNOWLEDGE REPRESENTATION



Logics for Data and Knowledge Representation

Exercises: RelBAC

Define the TBox for the following statements

- All users can download files
 $\text{User} \sqsubseteq \exists \text{Download.File}$
- A read access user can read files only
 $\text{ReadAccessUser} \sqsubseteq \forall \text{Read.File}$
- Those who can write can also read
 $\text{Write} \sqsubseteq \text{Read}$
- A limited user can download no more than 3 files
 $\text{LimitedUser} \sqsubseteq \leq 3 \text{ Download.File}$



Define the TBox for the following statements

- Programmers write programs

Programmer $\sqsubseteq \exists \text{Write}.\text{Programs}$

- Producers can produce music and song files only

Music $\sqsubseteq \text{File}$

Song $\sqsubseteq \text{File}$

Producer $\sqsubseteq \forall \text{Produce}.\text{(Music} \sqcup \text{Song)}$

- A program can be downloaded by developers only

Program $\sqsubseteq \forall \text{Download}^{-1}.\text{Developer}$



Define a TBox and ABox for the following problem

- Diana wants to give read access to her friends to the files on her PC, and write access to her best friend Gloria only. Bill is just a friend.

Friend $\sqsubseteq \exists \text{Read.File}$

BestFriend $\sqsubseteq \exists \text{Write.File}$

BestFriend $\sqsubseteq \text{Friend}$

BestFriend(Gloria)

Friend(Bill)

- Can Gloria read Diana's files?

Yes

BestFriend(Gloria) \Rightarrow Friend(Gloria) $\Rightarrow \exists \text{Read.File(Gloria)}$



Define a TBox and ABox for the following problem

- In a library, employees have access to books. However, a loaned book is a non precious book and can read by clients. Mary is a client and reads a book titled “Top stories”.

Employee $\sqsubseteq \exists \text{Access.Book}$

LoanedBook $\sqsubseteq \text{Book} \sqcap \neg \text{Precious} \sqcap \forall \text{Read}^{-1}.\text{Client}$

Client(Mary)

Read(Mary, TopStories)

- Is the book precious?

Yes

We can verify that Precious(TopStories) is consistent with the ABox and TBox above.



Projects: formalization of Wikipedia

Directed by	Robert Zemeckis
Produced by	Neil Canton Bob Gale <i>Executive producers:</i> Steven Spielberg Kathleen Kennedy Frank Marshall
Written by	Robert Zemeckis Bob Gale
Starring	Michael J. Fox Christopher Lloyd Lea Thompson Crispin Glover Thomas F. Wilson
Music by	Alan Silvestri
Cinematography	Dean Cundey
Editing by	Harry Keramidas Arthur Schmidt
Studio	Amblin Entertainment
Distributed by	Universal Pictures
Release date(s)	July 3, 1985
Running time	116 minutes
Country	United States
Language	English
Budget	\$19 million
Gross revenue	\$381,109,762
Followed by	<i>Back to the Future Part II</i>

DIRECTOR

ACTOR

DATE OF PRODUCTION

MOVIE: Back to the future

Film \equiv Movie
Movie \sqsubseteq Director.Person
Movie \sqsubseteq Actor.Person
Movie \sqsubseteq DateOfProduction.Date

Movie(BackToTheFuture)
Director(BackToTheFuture,RobertZemeckis)
...

FILM

Categories: [1985 films](#) | [American films](#) | [English-language films](#) | [Back to the Future films](#) | [1980s science fiction films](#) | [American science fiction films](#) | [Hugo Award Winner for Best Dramatic Presentation](#) | [United States National Film Registry films](#) | [Films set in 1955](#) | [Films set in 1985](#) | [Films set in the 1950s](#) | [Films set in the 1980s](#) | [Time travel films](#) | [Comedy science fiction films](#) | [1980s comedy films](#) | [Films produced by Steven Spielberg](#) | [Films directed by Robert Zemeckis](#) | [Universal Pictures films](#) | [Amblin Entertainment films](#) | [American teen comedy films](#) | [Films set in California](#)

Projects: formalization of Wikipedia

- ❑ Concentrate on info-boxes and categories
- ❑ Identify basic classes and main relations
 - ❑ Create a vocabulary
 - ❑ Map to WordNet (exact match or suitable parent)
 - ❑ Provide natural language descriptions

NOTE: look for synonyms

- ❑ Create the corresponding TBox and ABox
- ❑ Compare results in subgroups and go for reconciliation



Projects: formalization of YAGO

wikicategory_Rare_diseases \sqsubseteq Disease

WordNet: **disease** -- (an impairment of health or a condition of abnormal functioning)

wikicategory_Landforms_of_Greece \sqsubseteq formation

WordNet: **geological formation, formation** -- ((geology) the geological features of the earth)

wikicategory_Futurologists \sqsubseteq futurologist

futurologist \sqsubseteq expert

Wikipedia: **futurologist** -- scientists and social scientists whose specialty is to attempt systematically to predict the future, whether that of human society in particular or of life on earth in general.

WordNet: **scientist, man of science** -- (a person with advanced knowledge of one or more sciences)

