

Travel Ontology

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Introduction

We created a travel ontology, it focuses on all activities that are generally done by travellers. The description of this ontology follows as:

Description of Main Classes

- **ACCOMODATION** It consists of all stuff that are required for accomodation purposes for a traveller. It also has a subclasses Hotel that keeps track of all types of hotels.
- **ACTIVITY** This class covers all types of vacations that one takes to travel. It subclasses includes: Adventure, Relaxation, Sightseeing, Sports etc.
- **CONTACT** It specifies contact details any person that is travelling and other contact details of hotels and guides if any.
- **DESTINATION** This involves all those places where a traveller is destined to reach. This involves elements like - BackpackersDestination, Beach, FamilyDestinations etc. It also involves subclasses like RuralArea, and UrbanArea etc.

1 Full Travel Ontology Entites

All comes under the **owl:Thing** class

- Accomodation
 - BedAndBreakfast
 - BudgetAccommodation
 - Campground
 - Hotel
 - LuxuryHotel
 - AccommodationRating
- Activity
 - Adventure
 - BunjeeJumping
 - Safari
 - Relaxation
 - Sunbathing

- Yoga
- Sightseeing
- Museums
- Safari
- Sports
- Hiking
- Surfing

- Contact

- Destination

- BackpackersDestination
- Beach
- BudgetHotelDestination
- FamilyDestination
- QuietDestination
- RetireeDestination
- RuralArea
- Farmland
- NationalPark
- UrbanArea
- City
- Town

Travel Ontology in Description Logic Language

Classes

Accommodation

AccommodationRating

$\text{AccommodationRating} \equiv \{\text{OneStarRating}\} \sqcup \{\text{TwoStarRating}\} \sqcup \{\text{ThreeStarRating}\}$

Activity

Adventure

$\text{Adventure} \sqsubseteq \text{Activity}$

$\text{Adventure} \sqsubseteq \neg \text{Sightseeing}$

$\text{Adventure} \sqsubseteq \neg \text{Relaxation}$

$\text{Adventure} \sqsubseteq \neg \text{Sports}$

BackpackersDestination

$\text{BackpackersDestination} \equiv \text{Destination} \sqcap \exists \text{hasAccommodation BudgetAccommodation} \sqcap \exists \text{hasActivity} (\text{Adventure} \sqcup \text{Sports})$

Beach

Beach \sqsubseteq Destination

BedAndBreakfast

BedAndBreakfast \sqsubseteq Accommodation

BedAndBreakfast $\sqsubseteq \neg$ Hotel

BedAndBreakfast $\sqsubseteq \neg$ Campground

BudgetAccommodation

BudgetAccommodation \equiv Accommodation $\sqcap \exists$ hasRating ($\{\text{OneStarRating}\} \sqcup \{\text{TwoStarRating}\}$)

BudgetHotelDestination

BudgetHotelDestination \equiv Destination $\sqcap \exists$ hasAccommodation (BudgetAccommodation \sqcap Hotel)

BunjeeJumping

BunjeeJumping \sqsubseteq Adventure

Campground

Campground \sqsubseteq Accommodation

Campground $\sqsubseteq \exists$ hasRating {OneStarRating}

Campground $\sqsubseteq \neg$ BedAndBreakfast

Campground $\sqsubseteq \neg$ Hotel

Capital

Capital $\sqsubseteq \exists$ hasActivity Museums

Capital \sqsubseteq City

City

City \sqsubseteq UrbanArea

City $\sqsubseteq \exists$ hasAccommodation LuxuryHotel

Contact

Destination

FamilyDestination

FamilyDestination \equiv Destination $\sqcap \geq 1$ hasAccommodation Thing $\sqcap \geq 2$ hasActivity Thing

Farmland

Farmland \sqsubseteq RuralArea

Hiking

Hiking \sqsubseteq Sports

Hotel

Hotel \sqsubseteq Accommodation
Hotel $\sqsubseteq \neg$ BedAndBreakfast
Hotel $\sqsubseteq \neg$ Campground

LuxuryHotel

LuxuryHotel \sqsubseteq Hotel
LuxuryHotel $\sqsubseteq \exists$ hasRating {ThreeStarRating}

Museums

Museums \sqsubseteq Sightseeing

NationalPark

NationalPark $\sqsubseteq \exists$ hasActivity Hiking
NationalPark $\sqsubseteq \exists$ hasAccommodation Campground
NationalPark \sqsubseteq RuralArea

QuietDestination

QuietDestination \equiv Destination $\sqcap \neg$ FamilyDestination

Relaxation

Relaxation \sqsubseteq Activity
Relaxation $\sqsubseteq \neg$ Sports
Relaxation $\sqsubseteq \neg$ Adventure
Relaxation $\sqsubseteq \neg$ Sightseeing

RetireeDestination

RetireeDestination \equiv Destination $\sqcap \exists$ hasAccommodation (\exists hasRating {ThreeStarRating}) $\sqcap \exists$ hasActivity Sightseeing

RuralArea

RuralArea \sqsubseteq Destination
RuralArea $\sqsubseteq \neg$ UrbanArea

Safari

Safari \sqsubseteq Adventure
Safari \sqsubseteq Sightseeing

Sightseeing

Sightseeing \sqsubseteq Activity
Sightseeing $\sqsubseteq \neg$ Adventure
Sightseeing $\sqsubseteq \neg$ Sports
Sightseeing $\sqsubseteq \neg$ Relaxation

Sports

Sports \sqsubseteq Activity

Sports $\sqsubseteq \neg$ Relaxation

Sports $\sqsubseteq \neg$ Sightseeing

Sports $\sqsubseteq \neg$ Adventure

Sunbathing

Sunbathing \sqsubseteq Relaxation

Surfing

Surfing \sqsubseteq Sports

Thing

Town

Town \sqsubseteq UrbanArea

UrbanArea

UrbanArea \sqsubseteq Destination

UrbanArea $\sqsubseteq \neg$ RuralArea

Yoga

Yoga \sqsubseteq Relaxation

Object properties

hasAccommodation

\exists hasAccommodation Thing \sqsubseteq Destination

$\top \sqsubseteq \forall$ hasAccommodation Accommodation

hasActivity

hasActivity \equiv isOfferedAt⁻

\exists hasActivity Thing \sqsubseteq Destination

$\top \sqsubseteq \forall$ hasActivity Activity

hasContact

\exists hasContact Thing \sqsubseteq Activity

$\top \sqsubseteq \forall$ hasContact Contact

hasPart

TransitiveProperty hasPart

\exists hasPart Thing \sqsubseteq Destination

$\top \sqsubseteq \forall$ hasPart Destination

hasRating

$\exists \text{ hasRating Thing} \sqsubseteq \text{Accommodation}$
 $\top \sqsubseteq \forall \text{ hasRating AccommodationRating}$

isOfferedAt

$\text{hasActivity} \equiv \text{isOfferedAt}^-$
 $\exists \text{ isOfferedAt Thing} \sqsubseteq \text{Activity}$
 $\top \sqsubseteq \forall \text{ isOfferedAt Destination}$

Data properties

hasCity

$\top \sqsubseteq \leq 1 \text{ hasCity}$
 $\exists \text{ hasCity Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral} \sqsubseteq \text{Contact}$
 $\top \sqsubseteq \forall \text{ hasCity Datatypehttp://www.w3.org/2001/XMLSchemastring}$

hasEMail

$\top \sqsubseteq \leq 1 \text{ hasEMail}$
 $\exists \text{ hasEMail Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral} \sqsubseteq \text{Contact}$
 $\top \sqsubseteq \forall \text{ hasEMail Datatypehttp://www.w3.org/2001/XMLSchemastring}$

hasStreet

$\top \sqsubseteq \leq 1 \text{ hasStreet}$
 $\exists \text{ hasStreet Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral} \sqsubseteq \text{Contact}$
 $\top \sqsubseteq \forall \text{ hasStreet Datatypehttp://www.w3.org/2001/XMLSchemastring}$

hasZipCode

$\top \sqsubseteq \leq 1 \text{ hasZipCode}$
 $\exists \text{ hasZipCode Datatypehttp://www.w3.org/2000/01/rdf-schemaLiteral} \sqsubseteq \text{Contact}$
 $\top \sqsubseteq \forall \text{ hasZipCode Datatypehttp://www.w3.org/2001/XMLSchemaint}$

Individuals

BlueMountains

BlueMountains : NationalPark

BondiBeach

BondiBeach : Beach

Cairns

Cairns : City

Canberra

Canberra : Capital

CapeYork

CapeYork : RuralArea

Coonabarabran

Coonabarabran : Town

CurrawongBeach

CurrawongBeach : Beach

FourSeasons

FourSeasons : LuxuryHotel

OneStarRating

OneStarRating : AccommodationRating

$\{\text{OneStarRating}\} \neq \{\text{TwoStarRating}\}$

$\{\text{OneStarRating}\} \neq \{\text{ThreeStarRating}\}$

Sydney

Sydney : Capital

hasPart(Sydney, BondiBeach)

hasAccommodation(Sydney, FourSeasons)

hasPart(Sydney, CurrawongBeach)

ThreeStarRating

ThreeStarRating : AccommodationRating

$\{\text{ThreeStarRating}\} \neq \{\text{TwoStarRating}\}$

$\{\text{OneStarRating}\} \neq \{\text{ThreeStarRating}\}$

TwoStarRating

TwoStarRating : AccommodationRating

$\{\text{OneStarRating}\} \neq \{\text{TwoStarRating}\}$

$\{\text{ThreeStarRating}\} \neq \{\text{TwoStarRating}\}$

Warrumbungles

Warrumbungles : NationalPark

Woomera

Woomera : RuralArea

Datatypes

int

string