Introduction:

This report throws light on the basics of ontology and one of its applications, Music Ontology. DBTune is a service which was mainly designed to experiment heterogeneous interlinked music datasets designed using music ontology and related vocabularies. The report describes in detail about MySpace which is one of the dataset for DBTune. It talks about the RDF representation of MySpace users, queries involved to get information about artists, their tracks, friends and other data. Finally it illustrates a music portal developed for last.fm. Last.fm, like MySpace is a music community that has active users by maintaining profile information, playlists and various interests of the users.

What is Ontology?

Ontology is a formal specification of a set of concepts within a domain and the relationship between these concepts. In other words, it is a shared vocabulary which can be used to model a domain. Currently ontology is used in many fields like artificial intelligence, semantic web, biomedical infrastructure, library science.

Components of Ontology

Ontology is composed of many components. Some among the important ones are:
• Individuals: instances or objects
• Classes: It is a collection or set of objects
• Attributes: Characteristics of the objects
• Relations: Association between an individual and a class
• Events: change in attributes or relations

Languages for representing ontology:

RDF and OWL are the two languages currently used to represent ontology. In this report we are going to use RDF mostly to represent ontology.

DBTune:

DBTune is a service that interlinks heterogeneous datasets dealing with music related ontologies. Some of the datasets available on DBTune are Jamendo, Magnatune, BBC John Peel sessions, MySpace, Musicbrainz, BBC playcount etc., on linking these datasets, they provide SPARQL endpoint used to query RDF triples. SPARQL is a query language that is used for querying RDF data.

MySpace:

It is a service which provides live RDF representation of MySpace users. The representation used by MySpace is designed using Music Ontology, FOAF and MySpace Ontology. It also links to Musicbrainz and BBC music artists. MySpace ontology mainly consists of

Classes: Agent, AudioFile, Country, Genre, MusicArtist, Page
**Properties:** age, bandMembers, cachedMP3, friend, genreTag, influences, myspaceID, plays, profileViews, recordLabel, soundsLike, topFriend, totalPlays.

**Namespaces used:**

Following are the prefixes used by MySpace ontology.

- mysp (http://purl.org/ontology/myspace/)
- foaf (http://xmlns.com/foaf/0.1/)
- mo (http://purl.org/ontology/mo/)
- geo (http://www.w3.org/2003/01/geo/)

*(Please find Classes and Properties explained in Appendix A)*

**SPARQL Queries:**

With the above said ontology definitions various SPARQL queries have been written as a part of this project to retrieve different information like:

1) All the information about an artist (picture, profile view, location, country and number of friends) given name (eg: “dj cappel”)

```sparql
PREFIX mysp:<http://purl.org/ontology/myspace#>
PREFIX foaf:<http://xmlns.com/foaf/0.1/>
PREFIX mo:<http://purl.org/ontology/mo/>

WHERE {
?artist a mo:MusicArtist ;
foaf:name "dj cappel" .

?artist foaf:depiction ?image ;
mysp:profileViews ?profile_views ;
```
2) Information about top friends of an artist given name (friend’s name and picture)

```sql
PREFIX mysp:<http://purl.org/ontology/myspace#>
PREFIX foaf:<http://xmlns.com/foaf/0.1/>
PREFIX mo:<http://purl.org/ontology/mo/>

SELECT ?friend ?frnd_name ?image
WHERE {
  ?artist a mo:MusicArtist;
    foaf:name "dj cappel" .
  ?friend foaf:name ?frnd_name;
    foaf:depiction ?image .
}
```

3) Information about the tracks that an artist made (link to the track, title, image, number of plays)

```sql
PREFIX mysp:<http://purl.org/ontology/myspace#>
PREFIX foaf:<http://xmlns.com/foaf/0.1/>
PREFIX mo:<http://purl.org/ontology/mo/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX dc:<http://purl.org/dc/elements/1.1/>

WHERE {
  ?artist a mo:MusicArtist;
    foaf:name "dj cappel" .
  ?track dc:title ?title ;
    mo:available_as ?link ;
    foaf:depiction ?track_img ;
}
```
4) Genre tags associated with an artist

```sparql
PREFIX mysp:<http://purl.org/ontology/myspace#>
PREFIX foaf:<http://xmlns.com/foaf/0.1/>
PREFIX mo:<http://purl.org/ontology/mo/>

SELECT ?genreTag
WHERE {
  ?artist a mo:MusicArtist ;
    foaf:name "dj cappel" .
}
```

We have seen about Myspace ontology and the queries involved in fetching information for the given dataset. Note that there are no optional fields used since all the artist have all the above information.

**Last.fm:**

Last.fm is also a music community which stores profile information about their users, playlist of songs and other information that may interest a music lover. Like other datasets Last.fm also has ontology. But it does not provide SPARQL endpoint to query data but instead provides API for easy access of the dataset. API methods available can be used to extract information about the artist, track, events, albums etc.,

A music portal which helps in retrieving information about an artist given his/her name has been developed. It accepts the name of the artist in the main page and provides suggestions of various artist that are similar to the given artist name. On selecting one of the artists, it takes to the next page which gives details about that particular artist. Appendix B has screenshots of the portal developed.
REFERENCES:

- DBTune
- SPARQL
- Myspace
- Myspace Ontology
- Last.fm API

APPENDIX A

Classes:

myspo:Agent - MySpace agent

myspo:AudioFile - An audio file on a MySpace artist page

myspo:Country - A country location specified on MySpace

myspo:Genre - MySpace genre from the list of 119 music genres currently specified by MySpace

myspo:MusicArtist - MySpace Artist page

myspo:Page - MySpace page

Properties:

myspo:age - MySpace age - an age of a MySpace agent in years

myspo:bandMembers - A data property container for the free text field on MySpace indicating 'band members
myspo:cachedMP3 - A data property container for the cached audiofile url associated with a MySpace agent

myspo:friend - MySpace friend relationship - an undirected (symmetric) relationship and a subproperty of foaf:knows

myspo:genreTag - Associates a mo:MusicArtist with a genre tag specified by artists on MySpace

myspo:influences - A data property container for free text field specifying a music artist's influences on MySpace

myspo:myspaceID - A data property container for the MySpace user id number

myspo:plays - A data property container for the number of plays for a given track on MySpace

myspo:profileViews - A data property container for the profile views associated with an agent on MySpace

myspo:recordLabel - A data property container for the free text field indicating a music artist's record label on MySpace

myspo:recordLabelType - A data property container for the field indicating a music artist's record label type on MySpace

myspo:soundsLike - A data property container for the free text field indicating what a music artist 'sounds like' on MySpace
**myspo:topFriend** - MySpace top friend relationship - a directed (asymmetric) relationship

**myspo:totalPlays** - A data property container for the total number of track plays for an artist on MySpace

**APPENDIX B**

**Main page of the Portal:**

![Last.fm Music Portal](image-url)
Suggestions page:

Select one of artist which matches the best and click submit.

Artist info page:
ARTIST: CHER

Biography

Cher (born Cherilyn Sarkisian on May 20, 1946, later adopted by Gilbert B. Lefévre Jr.) is an American singer, actress, songwriter, author and entrepreneur. Among her many career accomplishments in music, television and film, she has won an Academy Award, a Grammy Award, an Emmy Award and three Golden Globe Awards among others. Cher first rose to prominence in 1965 as one half of the pop rock duo Sonny & Cher. She also established herself as a solo recording artist, releasing 15 albums, contributing to numerous compilations, and totaling 34 Billboard Top 40 entries over her career, eight of which ranked number one (four solo, two with Sonny, one as part of a charity single). She became a television star in the 1970s and a film actress in the 1980s. In 1987, she won the Academy Award for Best Actress for her role in the romantic comedy Moonstruck. In a career spanning 40 years, Cher has been described as an enduring pop icon and one of the most popular female artists in music history. Since her debut in 1964, Cher has sold a total of over 100 million records worldwide and an estimated 70 million singles and with this Sonny and Cher over 75 million records becoming one of the biggest-selling artists of all time. During 2007, at the seventh volume of Closer Than Ever, Cher once again confirmed that she is working on her twenty-first studio album. No recordings have been released as yet, and no release date had been scheduled. It is rumored that Cher will collaborate with Transformer in a song for her next album. Shrek 2, which will also feature Justin Timberlake, Madonna, Dido and Christina Aguilera. The album is expected to be released in November 2008. On February 7, 2008, Cher, at 61, announced that she had reached an deal to perform 200 shows over three years live at the Colosseum at Caesars Palace in Las Vegas. Her new tour, entitled Cher at the Colosseum, will debut on May 6, 2011. [8] The tour reportedly includes 18 dancers, 4 musicians, and multiple costumes designed by Bob Mackie. Choreography will be directed by Dominick Salandra, who also worked with Cher on her past three major tours. Her show will perform four nights a week for six months, and a second leg of the show will continue in August. Cher will share the stage on a rotating basis with contemporaries Britney Spears (whose The Circus Starring Britney Spears opened on February 20, 2009) and Elton John (whose The Red Piano which opened in 2004, will continue its run of about 50 shows a year). On February 10, 2008, Cher made a brief appearance at the Grammy Awards, introducing a performance by Tina Turner and Beyoncé Knowles. Cher is set to make her musical debut and first film role in a decade in Burlesque starring alongside Christina Aguilera, who is making her musical and film debut. The film is set for a November 2010 release. Los Angeles (tags: pop, female vocalist | 80s: dance rock | cher (dis | female | 70s | 90s | ))

Top Tracks

<table>
<thead>
<tr>
<th>NAME</th>
<th>PLAY_COUNT</th>
<th>TAGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF I COULD TURN BACK</td>
<td>50984</td>
<td>80s pop cher female vocalist rock female vocalist dance female Pop-Rock american classic rock favorites Power ballad Disco 70s</td>
</tr>
<tr>
<td>Strong Enough</td>
<td>36616</td>
<td>pop dance 90s female vocalist Disco 80s female diva alternative electronic rock 80s female vocalist pop disco electro chic Cher gay</td>
</tr>
<tr>
<td>The Sheep Showed Song</td>
<td>23892</td>
<td>pop 80s female vocalist Soundtrack 90s catchy dance happy female vocalist rock Love classic american cover</td>
</tr>
<tr>
<td>Mardi Gras In New York</td>
<td>21385</td>
<td>pop 80s female vocalist rock female vocalist dance female Pop-Rock classic rock Love nostalgia absolute favorites adult contemporary american country rock ballad soft rock</td>
</tr>
<tr>
<td>Friend You're</td>
<td>15115</td>
<td>pop 80s cher female vocalist 1987 diva: diva: diva the best pop rock happy americana</td>
</tr>
<tr>
<td>Greatest.</td>
<td>14154</td>
<td>pop cher 70s female vocalist slides rock 80s: classics rock 80s: favorites female Gayly Pleasure 70s: best songs ever Top Gear</td>
</tr>
<tr>
<td>Waiting In Memphis</td>
<td>15700</td>
<td>pop 80s female vocalist: diva covers female diva american Disco female vocalist power women Cher - My friend - Waiting in Memphis Favorite post-modern greatness</td>
</tr>
<tr>
<td>Heat Of Stone</td>
<td>10012</td>
<td>pop 80s female vocalist cher pop rock rock heart of stone top 40 must have female vocalist adult contemporary My Random Music sung playlist over it shine</td>
</tr>
<tr>
<td>Dark Lady</td>
<td>10731</td>
<td>70s cher pop female vocalist rock classic rock female vocalist lega diva Top Classics dark lady adult contemporary 80s soft rock: gen playlist billboard number ones</td>
</tr>
</tbody>
</table>

Current Events

<table>
<thead>
<tr>
<th>EVENT</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 10 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 11 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 12 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 13 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 14 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
<tr>
<td>Cher</td>
<td>Start date: Sat Apr 17 00:00:00 EDT 2010 Venue: The Colosseum At Caesars Palace United States Ticket: TicketMaster Website:</td>
</tr>
</tbody>
</table>