

**RDF**

**Everywhere**

# Graphs are flexible representations

- A Graph representation is simple and flexible
- Relational tables are good also, but do come with many constraints
- So, representing data with graphs is a good choice as a general model

# Graph data shows up a lot today

- We can include FaceBook & Twitter metadata
  - Social media sites use this data found in web pages to select a post's title, image, short text, and more
  - It must be in the Web page's <head> section, though

- Facebook Examples

```
<meta property="og:type" content="article">
```

```
<meta property="og:title" content="FB OGP Example"/>
```

```
<meta property="og:author" content="Douglas Adams">
```

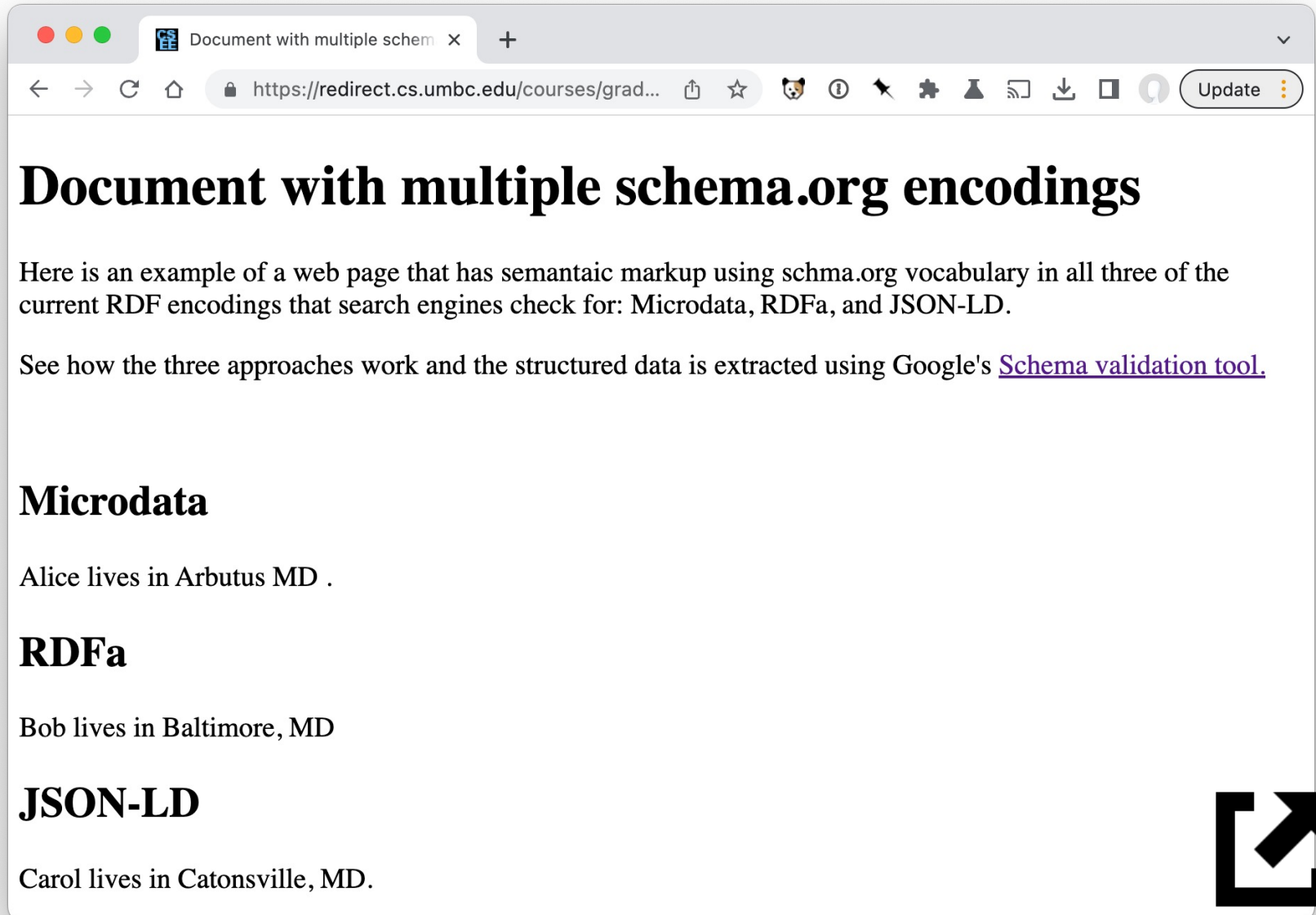
- Twitter Card examples

```
<meta name="twitter:card" content="summary" />
```

```
<meta property="og:title" content="Twitter OGP example" />
```

```
<meta property="og:image" content="https://i.imgur.com/8.jpg" />
```

# Three RDF Encodings



The image is a screenshot of a web browser window. The browser's address bar shows the URL `https://redirect.cs.umbc.edu/courses/grad...`. The page title is "Document with multiple schema.org encodings". The main content of the page includes a paragraph explaining that the page uses semantic markup with schema.org vocabulary in three different RDF encodings: Microdata, RDFa, and JSON-LD. It also provides a link to Google's "Schema validation tool". Below this, there are three sections, each with a heading and a sentence: "Microdata" with "Alice lives in Arbutus MD .", "RDFa" with "Bob lives in Baltimore, MD", and "JSON-LD" with "Carol lives in Catonsville, MD". In the bottom right corner of the browser window, there is a black square icon with a white arrow pointing diagonally up and to the right.

Document with multiple schema.org encodings

Here is an example of a web page that has semantic markup using schema.org vocabulary in all three of the current RDF encodings that search engines check for: Microdata, RDFa, and JSON-LD.

See how the three approaches work and the structured data is extracted using Google's [Schema validation tool](#).

## Microdata

Alice lives in Arbutus MD .

## RDFa

Bob lives in Baltimore, MD

## JSON-LD

Carol lives in Catonsville, MD.

# UMBC uses it to some degree

- UMBC's Web tools add some RDF-based markup
- For example, creating an event in a group produces a web page that has embedded RDFa with structured data
- This was relatively easy for DoIT to set up
- The event adding page adding asked for basic data to be used in other UMBC web pages like the [my.umbc.edu events page](http://my.umbc.edu/events)

# Adding an Event

Post an event - Computer Scienc x +

https://my3.my.umbc.edu/groups/csee/events/new

myUMBC Classic

Search Profile Guide Events Groups Help

Computer Science and Electrical Engineering  
Institutional Group · 3163 people

Notifications: All Updates

Home Posts Events Files People Settings Promotions

### Post an event

**Basic Info**

Title • New Event 51

Tagline A short summary of your event. Make it catchy. 60

Starts • 11/22/22 10:00 AM  All Day

Ends • 11/22/22 11:00 AM

Repeats Never ▾

Location • Select a location... Room #

Virtual Meeting URL A URL to join the meeting virtually. Don't forget the https://

Track virtual meeting participants (will require login to join)

Directions Additional information about the location: directions, where to meet, etc. 200

Event Calendar  Show only in this group.  Show in this group AND on the university calendar.

**Thumbnail**

No thumbnail set

Set Thumbnail

**Community**

Comments  Allow comments

Attendees  seats (blank for unlimited, 0 to disable)

Note: If your event is in-person AND virtual, seat limits only apply to in-person attendees.

**Tags**

Separate tags with spaces. Only letters, numbers, and dashes are allowed.

**Details**

Body •

enter event data

enter text description

# Adding an Event

Post an event · Computer Scienc

https://my3.my.umbc.edu/groups/csee/events/111915/edit?

myUMBC Classic

Search Profile Guide Events Groups Help

Tim Finin Log Out

Computer Science and Electrical Engineering  
Institutional Group · 3163 people

Notifications: All Updates

Home Posts Events Files People Settings Promotions

## Post an event

### Basic Info

**Title** \* Talk: How Does Fact-checking Affect News Engagement, 11/22 2

**Tagline** A Multi-method Study on Social Media Platforms 14

**Starts** 11/22/22 11:00 AM  All Day

**Ends** 11/22/22 12:50 PM

**Location** \* Information Technology/Engineering **Room #** 346

**Virtual Meeting URL** https://umbc.webex.com/meet/dayuan1  
 Track virtual meeting participants (will require login to join)

**Directions** Additional information about the location: directions, where to meet, etc. 200

**Event Calendar**  
New

Show only in this group.  
 Show in this group AND on the university calendar.

Free Food

**You must pick at least one event category:**

Academics & Research


Meetings & Discussions

Speakers & Special Events

**Important Rules for Events**

- Do not use Events to advertise upcoming deadlines for days/times other than when the deadline occurs.

### Thumbnail



Recrop Remove

### Community

**Comments**

Allow comments

**Attendees**

20 seats (blank for unlimited, 0 to disable)

Note: If your event is in-person AND virtual, seat limits only apply to in-person attendees.

### Tags

Separate tags with spaces. Only letters, numbers, and dashes are allowed.

check fact media social

# Event added!

The screenshot shows a web browser window with the address bar displaying `https://my3.my.umbc.edu/groups/csee/events/111915`. The page content includes a header for the 'Computer Science and Electrical Engineering' group, a navigation menu, and an event listing for 'Talk: How Does Fact-checking Affect News Engagement, 11/22'. The event details include the date, time, location, and a 'Join Online Event' button. A right-hand sidebar provides 'Event Info' such as the posting date, sponsor, tags, and sharing options. At the bottom, a 'Stats' section shows 120 total views and 12 people.

**Computer Science and Electrical Engineering**  
Institutional Group · 3163 people

Home Posts **Events** Files People Settings Promotions

**Talk: How Does Fact-checking Affect News Engagement, 11/22**  
A Multi-method Study on Social Media Platforms  
Tuesday, November 22, 2022 · 11 AM - 12:50 PM  
Information Technology/Engineering : 346

[Join Online Event](#)

UMBC ACM Chapter Talk

**How Does Fact-checking Affect News Engagement on Social Media Platforms: A Multi-method Study**

**Guohou (Jack) Shan**  
PhD Candidate at Temple University  
UMBC Alumni '2019.

11-12:50 pm ET, Tue. 22 Nov. 2022

ITE 346, UMBC and [Webex](#)

Social media platforms have begun to counter false news by integrating fact-checking services. These fact checkers verify posts' content and inform users about the posts' veracity before engaging with them. While the efficacy of fact-checking on users has been studied in

**Event Info**  
posted November 18, 2022  
sponsor UMBC ACM Chapter  
tags check fact media social  
share [email] [twitter] [facebook] [email] [tumblr]  
[add to calendar](#)

Edit Copy Cancel  
[Mark Important](#) [Pin](#)  
[Promote](#)

**Stats**  
120 Total Views  
12 People  
In the past 2 days:  
• 35 Views, 11 People  
Within 2 days of posting:



# View on Schema Validator

The screenshot shows the Schema Markup Validator interface. The browser address bar displays the URL: `https://validator.schema.org/#url=https%3A%2F%2Fmy3.my.umbc.edu%2Fgroups%2Fcsee%2Fevents%2F111915`. The page title is "Schema.org" with navigation links for "Documentation", "Schemas", and "About". The URL being validated is `https://my3.my.umbc.edu/groups/csee/events/111915`. The left pane shows the raw HTML code with the following schema markup:

```
241 </div>
242 <div class="sidebar" id="page">
243 <div id="main">
244 <div class="section event-show" style="margin-bottom: 48px;">
245 <div class="community">
246 <a href="/groups/csee"><span class="avatar medium" style="background-image: url('https:
247 </div>
248 <div class="content" itemscope itemtype="http://schema.org/Event">
249 <h2 class="title" itemprop="name">Talk: How Does Fact-checking Affect News Engagement,
250 <h4 class="tagline">A Multi-method Study on Social Media Platforms</h4>
251 <meta content="UserLikes:0" itemprop="interactionCount">
252 <meta content="UserComments:0" itemprop="interactionCount">
253 <div class="times">
254 <meta content="2022-11-22T11:00:00-05:00" itemprop="startDate">
255 <meta content="2022-11-22T12:50:00-05:00" itemprop="endDate">
256 <a href="/groups/csee/events?mode=upcoming" rel="nofollow">Tuesday, November 22, 2022</
257 </div>
258 <div class="location" itemprop="location" itemscope itemtype="http://schema.org/Place">
259 <meta content="Information Technology/Engineering : 346" itemprop="name">
260 <a class="new-window" href="http://maps.google.com/?t=k&mp;z=18&mp;q=Information%20Te
261 <div class="location">
262 <a class="button go large" href="https://my3.my.umbc.edu/groups/csee/events/111915/join
263 </div>
264 </div>
265 <hr>
266 <meta content="https://assets4-my.umbc.edu/system/shared/thumbnails/events/000/111/915/
267 <div class="thumb" style="float: right; margin-left: 16px;">
268 <span class="thumbnail large" style="background-image: url('https://assets4-my.umbc.edu
269 </div>
270 <div class="body html-content">
271 <div class="html-content"><div><strong>UMBC ACM Chapter Talk</strong></div><div><br>
272 </div>
273 <div class="buttons">
274 </div>
275 <div class="buttons" style="margin-top: 24px;">
276 <a class="button go" href="https://acm.umbc.edu/2022/11/17/acm-talk-hi-tea-nov-22-2022-
277 </div>
```

The right pane displays the validated schema as a table:

Event	
@type	Event
name	Talk: How Does Fact-checking Affect News Engagement, 11/22
interactionCount	UserLikes:0
interactionCount	UserComments:0
startDate	2022-11-22T11:00:00-05:00
endDate	2022-11-22T12:50:00-05:00
image	https://assets4-my.umbc.edu/system/shared/thumbnails/events/000/111/915/21a963a3d875c4e525a963a1d9323f7b/1arge.jpg?1668823028
location	Place
@type	Place
name	Information Technology/Engineering : 346
map	http://maps.google.com/?t=k&z=18&q=Information%20Technology%2FEngineering@39.2538014,-76.7142732
offers	Offer
@type	Offer
url	https://acm.umbc.edu/2022/11/17/acm-talk-hi-tea-nov-22-2022-tuesday-11am-to-1250pm-ite346/

The interface also shows "0 ERRORS" and "0 WARNINGS". A play button is visible over the HTML code, and a large arrow icon is in the bottom right corner.

# Social media metadata is there, too

```
<meta content="Talk: How Does Fact-checking Affect News Engagement, 11/22"
```

```
property="og:title">
```

```
<meta content="article" property="og:type">
```

```
<meta content="UMBC ACM Chapter Talk How Does Fact-checking Affect News  
Engagement on Social Media Platforms: A Multi-method Study Guohou (Jack) Shan  
PhD Candidate at Temple University UMBC Alumni..." property="og:description">
```

```
<meta content="summary" property="twitter:card">
```

```
<meta content="https://my3.my.umbc.edu/groups/csee/events/111915"
```

```
property="og:url">
```

```
<meta content="check" property="article:tag">
```

```
<meta content="fact" property="article:tag">
```

```
<meta content="media" property="article:tag">
```

```
<meta content="social" property="article:tag">
```

```
<meta content="https://assets1-my.umbc.edu/system/shared/thumbnails/events  
/000/111/915/21a963a3d875c4e525a963a1d9323f7b/xxlarge.jpg?1668823028"
```

```
property="og:image">
```



# ???

## => RDF

- Lots of work on mapping relational tables to RDF
- [Git to rdf](#) is an open-source project to extract metadata from git repositories as RDF
  - Can be used to support many interesting analytics
- [SPARQL Anything](#) is a system for Semantic Web re-engineering allowing users to ... query anything with SPARQL
  - Uses a generic abstraction for data source formats (Facade-X) to generate RDF data

# Conclusion

- I expect that we will see graph models (RDF and property graphs) used more frequently
- RDF has some advantages:
  - Good standards
  - Support for ontologies, simple or rich
  - Decades of development and experience
  - Many open-source and commercial systems available