

## 1. Objective

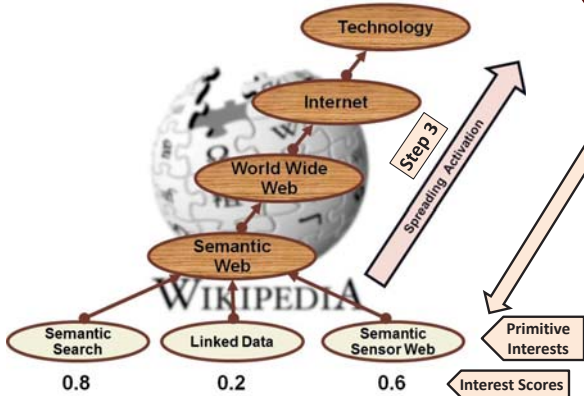
Generate **Hierarchical Interest Graph (HIG)** for Twitter users using Wikipedia Hierarchy.

**Hierarchical Interest Graphs** extends the existing personalization and recommendation systems by providing flexibility in selecting content with varying level of abstractness.

## Tweets & Entities

Example tweets showing various entities like 'Linked Data', 'semantic sensor web', 'Norvig views', 'schema.org', 'semantic search', etc.

## Wikipedia Hierarchy



## 2. Approach

Approach comprises of the below three steps

### Step 1

Understand what a user talks about on Twitter

#### Primitive Interests

Extract entities from user's tweets

#### Interest Scores

Score entities based on frequency

### Step 2

Map Primitive Interests to Wikipedia Hierarchy

### Step 3

**Spreading Activation**  
Spreading activation theory is adapted to spread the scores of entities from Step 1 to score "Interest Categories" in the **Hierarchical Interest Graph**

## Activation Normalizers

Normalizers are used at each iteration of spreading activation

$$\text{Bell: } F_i = 1/\text{nodes}_{(h_i+1)}$$

$$\text{Bell Log: } FL_i = 1/\log_{10}(\text{nodes}_{(h_i+1)})$$

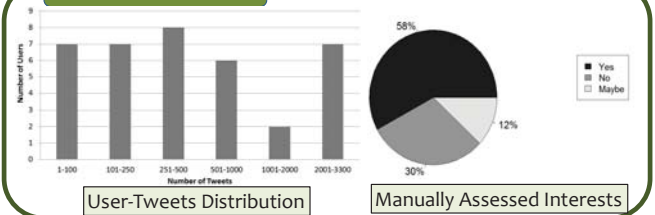
where  $\text{nodes}_{(h_i)}$  is the number of nodes at hierarchical level of node  $i$

## 3. User Study

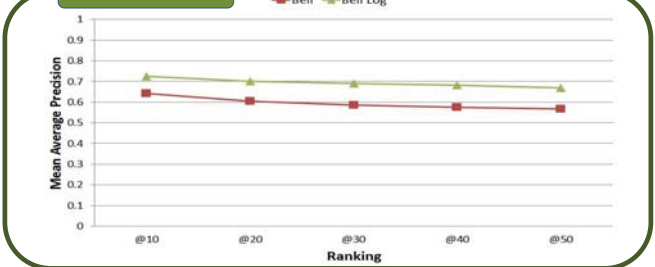
User study was conducted to manually assess the interest categories generated by the approach.

	Users	Tweets	Primitive Interests	Hierarchical Interests
Total	37	31927	29146	111535
Average		864	787	3014

## Data Distribution



## Evaluation



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**More Details:** Pavan Kapanipathi, Prateek Jain, Chitra Venkataramani, and Amit Sheth. User Interests Identification on Twitter Using a Hierarchical Knowledge Base. To appear at 11<sup>th</sup> Extended Semantic Web Conference, 2014. ESWC'14