**Abstract**
Mine & Dine is a local restaurant recommendation engine that mines social media (blogs, tweets, web posts) to better align recommendations with the user’s unique tastes.

**Motivation**

**Web 2.0**
- Large amount of user-generated content has flooded the web
- Users look online for peer recommendations and reviews before making purchases
- Social media seen as “pulse” of the web

**Blogosphere as repository of public opinion**
- Web logs, or “blogs”, seen as heart of social media
- Hundreds of millions in number and range over diverse topics
- Are concise expressions of opinion

**Today’s recommendation systems lacking**
- Bimodal ratings distributions due to “bragging” and “moaning”
- Small subscriber communities
- Choice Paralysis

**System Process Flow**

**Recommendation Generation**
- Access restaurant similarity matrix (built through process described below)
- Multiply similarity index by known ranking
- Take weighted sum of products to generate predicted rankings
- Rank untested restaurants by predicted rankings
- End-User

**Item-Based Collaborative Filtering Process (Back-end Work)**
- Parse blog dataset for related posts
- Use Adjusted Cosine Scoring system to calculate value of each index
- Utilize OpenAmplify API to translate posts into restaurant ratings
- Construct similarity matrix (bloggers X local restaurants)
- The actual calculation of the similarity matrix indices is expensive, because it involves identifying and tagging user reviews from a dataset of over 44 million blog posts. However, this calculation only need be done once in a while to keep similarity rankings up-to-date (can be done in off-peak times).

**Example**

**CALCULATION**
Assume Sitar is the only other restaurant in University City the user has not yet visited. If similarity (value pulled from matrix) of Thai Singha House to Sitar Indian Restaurant is 0.5.

- Then Sitar’s predicted ranking = (User’s ranking of Thai Singha)(Similarity of Thai Singha to Sitar) = (3.0)(0.5) = 1.5.

- Similarly, (User’s ranking of Pattaya)(Similarity of Pattaya to Sitar) = (4.0)(0.6) = 2.4

- User’s Predicted Ranking of Sitar = Weighted Sum = (1.5 + 2.4)/(0.5 + 0.6) = 3.55

**Conclusion**
Through item-based collaborative filtering, the user is matched with people who like similar restaurants and share similar taste. By determining what else a user’s peers like, Mine & Dine can predict a user’s rankings of restaurants he or she has not yet visited.