



## Motivating Problem

- Search is changing: [10 Blue Links](#) is limited.
- Insufficient to handle ambiguity in queries.
- Focusing on relevance hurts diversity.
- Aiming for diversity invariably hurts recall.
- No way to escape this trade-off in current *static* paradigm.

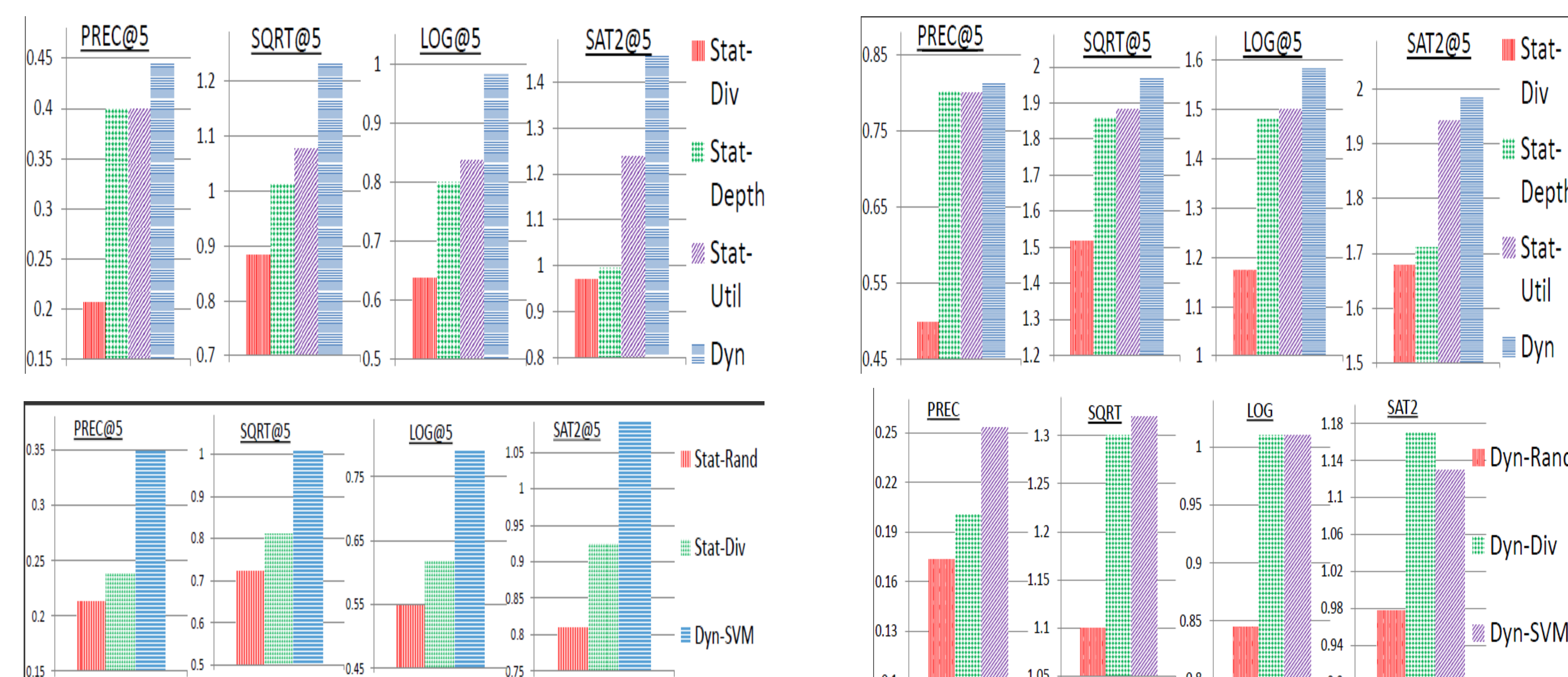
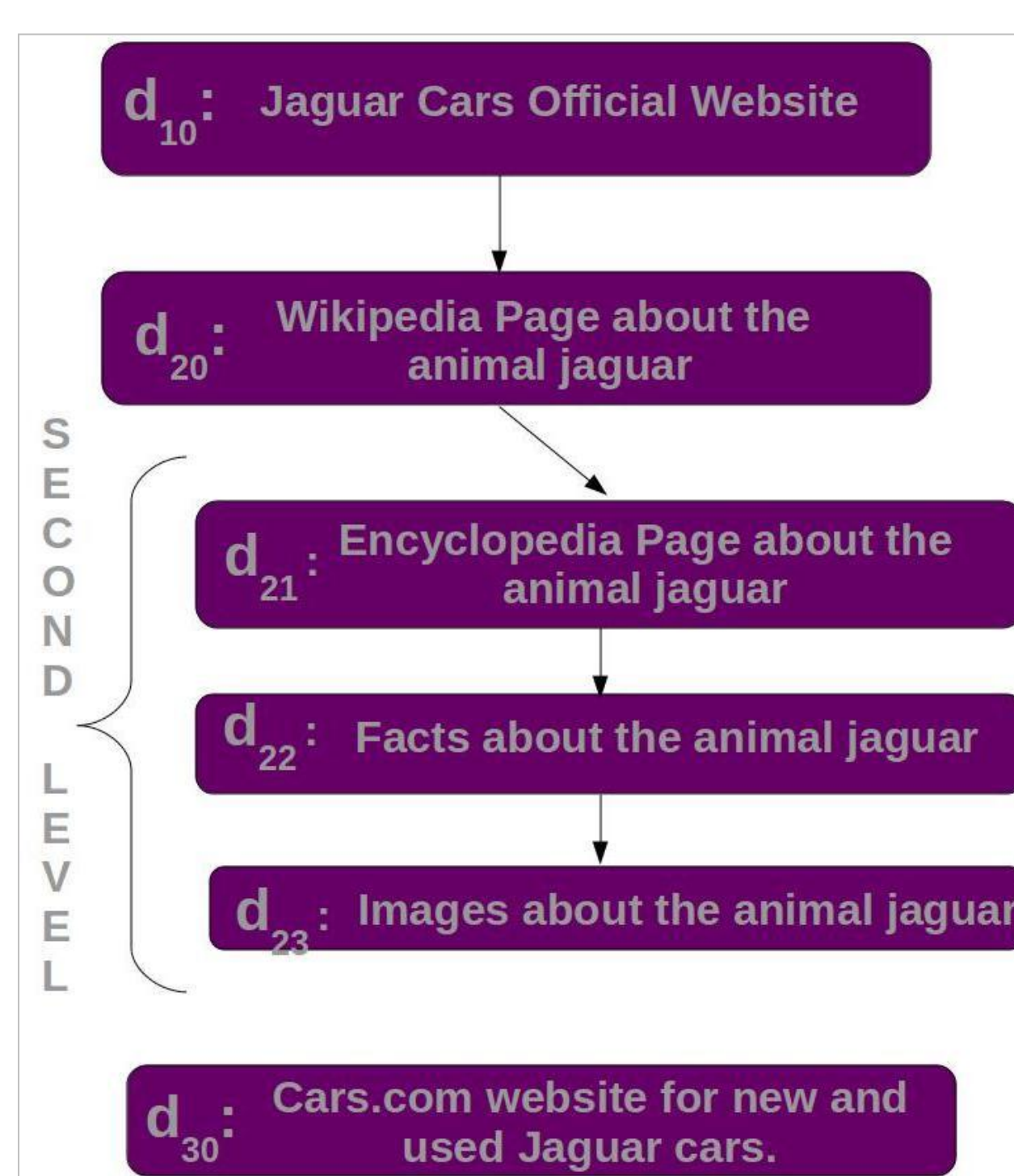
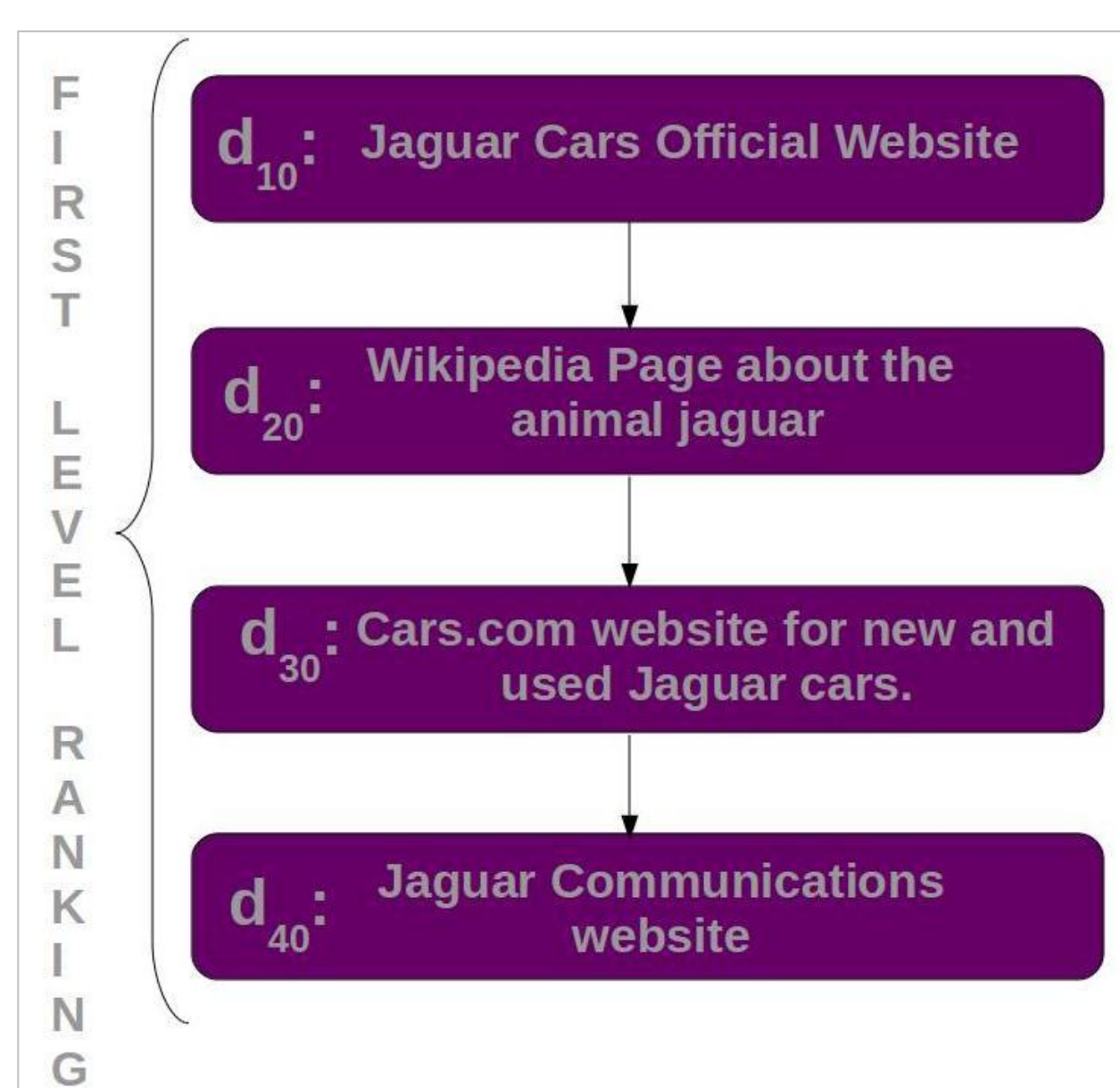
## Solution: Use the User

- User is the only true information source to help disambiguate.
- Users are constantly interacting with the search interface, providing valuable feedback in the form of clicks/skips/mouse-overs (which is going unused).
- Key Idea: Design interfaces to use this feedback to improve search!!
- Dynamic Ranking: A ranking that changes with user feedback, to *customize* it for the user and their need.
- Addresses ambiguity without hurting recall.
- Goal: 1. Come up with simple but effective dynamic ranking models.  
2. With efficient learning methods.

## Two-Level Dynamic Rankings

- Simple extension to current framework, which uses two levels of ranked lists.
- First level of ranking resembles standard diverse list. Used to infer user intent from their feedback.
- Second level presents users with documents relevant to their (inferred) need.
- Cast as Submodular optimization.
- Family of submodular performance measures proposed (cover many existing measures).
- Structural SVM based learning method to learn rankings which optimizes submodular measures.
- Experiments on standard datasets show dynamic rankings to improve over existing methods.
- Learning-based approach shown to work as well.

Work From: Raman et. al. (CIKM '11, ArXiv 29867 '11)



## Lots of Interesting Directions

- User studies to show the efficacy of the framework!!
- Using click-logs to learn these rankings.
- Dynamic Ranking as Online Learning ?
- Using topic hierarchies/ taxonomies to better learn the mutual relevance of pages for a user.
- Dynamic models for vertical/faceted search.
- Study, compare and contrast different dynamic models & provide scalable learning methods for them.