

First Call for Papers and Participation – 24 Nov 2015

IJCAI-2016 Workshop

4th Workshop on Heterogeneous Information Network Analysis (HINA)

Organizing Committee

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Technical Description of Workshop

In recent years, interest in **heterogeneous information network analysis (HINA)** have led to advances in information propagation models, community detection, analysis of citation and collaboration networks, and recommender systems. Three previous workshops on HINA have focused on the convergence of methodologies for network modeling, incorporating representation of heterogeneity (especially author-item-author and author-item-venue-item-author networks), path analysis, frequent subgraph mining, and using learning and inference in graphical models of probability to capture important aspects of heterogeneous information networks.

Active research areas that are relevant to heterogeneous information networks include:

- Models of information propagation across domains and social media
- Progressing beyond APA and APVPA models of citation networks
- Social sentiment analysis and topic models in HINA
- Community detection and formation modeling
- Path-based similarity measures and relationship extraction
- Applications to modeling of weblogs, social media, social networks, and the semantic web
- Trust networks, information sharing, and limitations of existing models
- Learning to rank in HINA
- Modeling of link types and relationship strength

(The first three of these are new topics not addressed in any previous HINA workshops.)

The emphasis of this workshop shall be approaches based on relationship extraction from heterogeneous sources including but not limited to: social media, social news, collaboration networks, and document collections.

Application areas that often exhibit a need for heterogeneous information network analysis include:

- **Behavioral modeling:** community dynamics, recruitment and mass activity, large-scale patterns, traffic, spatiotemporal effects, other behavioral modeling
- **Networks in education research**
- **Information diffusion and sharing systems:** social media (opinions and sentiments, meme propagation, viral content, political commentary, etc.)
- **Content-management systems:** version control, wikification
- **Social recommender systems:** communities, experts, friends, products, reviewers, providers
- **Application areas:** cybersecurity (information flow, trust networks, attack graphs, mechanism design), informatics

This workshop shall help to bring together people from these different areas and present an opportunity for researchers and practitioners to share new techniques for identifying and analyzing relationships in networks that integrate multiple types or sources of information. We also propose to coordinate with the social influence community to find opportunities for cross-fertilization and interdisciplinary collaboration.

Relevant media include, but are not limited to, forums, blogs, systems such as Twitter, YouTube, Facebook, Google+, LinkedIn, Pinterest, Tumblr, *etc.* Of particular interest are link types, path structure, semantic heterogeneity of networks, sharing mechanisms, status updates, systems for rating and commenting, and embedded content in the deep web, including images and video. However, as in previous HINA workshops, the scope is not limited to any particular approach to link analysis or any source of network information such as text corpora.

Intended Audience and Impact

This workshop is intended for researchers and practitioners in information systems that can be modeled using networks that exhibit some heterogeneity (*i.e.*, differentiation among the entities and potential relationships represented by graphical elements). Examples of such heterogeneous information networks include community graphs with roles such as moderators and members, including models of social media that differentiate content providers, critics, and consumers; graphs of web pages that are annotated with paths and relationship strength indicators; and blogs and tweets with links or co-occurrence data.

Analyzing heterogeneous information networks involves the application of diverse new approaches from information extraction and integration, graph theory and algorithms, machine learning, topic modeling, knowledge representation, and uncertain reasoning. Researchers with interests in big data, social media, knowledge discovery in databases, cyber-physical systems, and informatics will also find this workshop of interest. In particular, prominent challenges exemplified by real-world problems in this area include how to account for and make use of behavioral patterns (including some large to colossal patterns), social dynamics including information propagation, relational characteristics, organizational structure, dynamic topic modeling, and concept drift.

We welcome paper submissions from researchers in all areas of heterogeneous information networks listed in the above section describing the workshop scope. We also hope to attract IJCAI participants from industrial R&D with interesting current applications that showcase aspects of heterogeneity in social and other networks.

Workshop Logistics

The workshop will be a single-day event featuring morning and afternoon technical sessions. In the spirit of fostering new research and collaboration, care will be taken to maximize available time for discussions and questions. The program committee will aim at accepting about 8-10 technical papers for full oral presentation.

Following brief welcoming remarks, a 3-hour morning session will consist of approximately half the oral technical presentations. A single invited talk following the lunch break will be aimed at serving the interests of a variety of intelligent systems researchers and attracting new researchers to the topic of heterogeneous information networks. The afternoon session will include the second half of the technical papers, concluding early with an optional poster session and a brief open discussion about possible special issues of journals on the topic. The goal of both concluding sessions is to provide additional opportunities for cross-fertilization between academic and industrial research, through introduction of applications and methodologies that may otherwise be unfamiliar to participants in diverse areas.

Relevant Past Workshops

Recent Events Related to Proposed Topic (last 2 years, reverse chronological order)

IJCAI HINA 2015 – 3rd workshop

UMAP 2015, 23 Jun – 03 Jul 2015

WAIM HENA 2015, 08 Jun 2015 – <http://bklitsm.bupt.edu.cn/HENA2015/WebRoot/Submissions.html>

ICWSM 2015, 26-29 May 2015

UMAP 2014, 07-11 Jul 2014

ICWSM 2014, 02-04 Jun 2014

Program Committee

To be determined.