Brief Bio and (PR)²: Problems & Pitches – Rants & Raves by Amit Sheth

About me
Amit Sheth is an educator, researcher, and entrepreneur. He is the LexisNexis Ohio Eminent Scholar, an endowed faculty position funded by LexisNexis and the Ohio Board of Regents at Wright State University. He directs Kno.e.sis - the Ohio Center of Excellence in Knowledge-enabled Computing, which is one of Ohio's Centers of Excellence in BioHealth Innovation. The Center and Eminent Scholar's activities are housed on the third floor of the WSU College of Engineering and Computer Science's new $11 million Joshi Research Center, which is the focal point for statewide research in Web 3.0 and inter-disciplinary research involving collaborations between Computer Scientists and researchers in Health Care & Life Sciences, Cognitive Sciences, and other disciplines.

http://knoesis.wright.edu/amit/

Tools
http://knoesis.org/showcase
http://knoesis.org/opensource
http://knoesis.org/amit/commercialization

Questions

1. What are your main interests in attending the workshop?
   Continue developing vision and seek interdisciplinary collaborations; meet several good research colleagues I have interacted with in the past.

2. What ideas, methods and tools would you like to share at the workshop?
   (a) Ability to analyze unstructured/semistructured/structured/LOD as well as experimental/lab/community curated/literature data in the context of specific biomedical/clinical problem, enabled by using semantic approach-- in particularly by quickly building background knowledge and combining with more traditional DB/IR/NLP/ML techniques. I could share some of these as deemed relevant (including demos of tools for semiautomatic domain model building, semantic browsing of biomedical literature, literature based discovery). (b) Social media analysis to study prescription drug abuse epidemiology (including tools in use and interesting findings). (c) Consumer health information seeking on social media. (d) Use of low cost sensors, smart phone and intelligent processing (reasoning) adapted to run on smartphones at scalable level to take multimodal sensor data/observations and transform into semantic perceptions (eg patient risk levels), with application to reducing rehospitalization of chronic heart patients (a problem that currently has 25% rehospitalization in 30 days, and costs $17billion/year) and other diseases.

But more than a specific technology agenda, I am on the lookout for challenging problems requiring synergy between clinical/biomedical and computational expertise.
3. What do you think are the biggest opportunities or unmet needs in any of: translational medicine, drug discovery, semantic technologies, data visualization, or healthcare information? (feel free to pick those with which you have the most interest/experience)

Making discovery (finding patterns, connecting dots, …) in noisy and semantically very heterogeneous (multiscale, longitudinal,…) data.
Finding right balance between techniques that take painstaking curation with significant human effort and more automated techniques for creating decent but not high quality knowledge.

Manage various personal dependencies in drug delivery (each person reacts differently to a drug, has different ideal dose, has different effectiveness, has different side effects,…)- develop a fuller understanding first, and then address challenges.

As individuals take more responsibilities of managing their own health, understand effective use of social media (what social media content is more relevant in the context of user need; what is the notion of relevancy?). How to take an individual who is seeking health information social media.

4. What are the biggest road blocks to realizing these opportunities?
(a) funding and funding process (b) challenges in developing multidisciplinary collaborations (all the time and efforts it takes to get to a stage before it can be convincingly presented and hopefully funded) (c) for some problems, challenges in working with patients (eg clinical protocol/trial development/approval).

5. In which of the main areas of emphasis of the workshop (semantics, translational medicine, drug discovery, big data, semantic technologies, visualization and networks) do you work?

More directly on semantics and semantic technologies (also sensors/devices, social media with respect to medical and health applications), but have collaborated with others on translational medicine and drug discovery applications.

6. What are the biggest challenges in your work currently?
See answer to #4.

7. What are the main sources of funding for your work? How difficult do you consider it to get funding in your area, and why?

NIH and NSF.
We have done fine (some would say well) but it remains highly competitive.

8. What would you like to learn and achieve at the workshop?

I already have a number of biomedical and clinical collaborations, but would love to continue to look for more—esp. in drug discovery/delivery/personalization areas, and where use of semantic, social and sensor technologies can change the current paradigm.