



## **Discovery Informatics: Scientific Discoveries Enabled by AI**

**Sunday July 27, 2014**

Workshop co-located with AAAI-2014

Quebec City, Quebec

<http://www.discoveryinformaticsinitiative.org/diw2014>

8:30 am - 9:00 am **Welcome to the workshop and discussion on Discovery Informatics**

9:00 am - 10:30 pm **Paper presentations (I)**

“Using computational creativity to guide data-intensive scientific discovery”  
Kazjon Grace and Mary Lou Maher

“Data Smashing: Uncovering lurking order in data”  
Ishanu Chattopadhyay and Hod Lipson

“Computational Ideation in Scientific Discovery: Interactive Construction, Evaluation and Revision of Conceptual Models”  
Ashok Goel and David Joyner

“Semantically Integrating Biomedical Databases to Support Inference” (*Short paper*)  
Kevin M. Livingston, Michael Bada, William A. Baumgartner Jr., Lawrence E. Hunter

10:30 am - 11:00 am *Coffee Break*

11:00 am - 12:30 pm **Paper presentations (II)**

“Towards a Content-Based Material Science Discovery Network”  
Emily Leblanc, Marcello Balduccini and William Regli.

“‘Its All Made Up’ - Why we should stop building representations based on interpretive models and focus on experimental evidence instead”  
Gully Burns and Hans Chalupsky

“Distilling Evidence Of Long-range Direction-specific Causal Cross-talk In Molecular Evolution Of Retro-viral Genomes”  
Ishanu Chattopadhyay and Hod Lipson

“Ten Habits of Highly Effective Data” (*Short paper*)  
Anita de Waard

12:30 pm - 2:00 pm *Lunch*

2:00 pm - 2:30 pm **Paper presentations (III)**

“Discovery of Damage Patterns in Fuel Cell and Earthquake Occurrence Patterns by Co-occurring Cluster Mining”

Ken-Ichi Fukui, Daiki Inaba and Masayuki Numao

\*\* “Discoveries and Anti-Discoveries on the Web of Argument and Data” (*Short paper*)

Tim Clark, Carole Goble, Paolo Ciccarese

2:30 pm - 3:30 pm **AAAI/IAAI Conference Paper Highlights and Discussion**

“Active Learning with Model Selection”

Alnur Ali, Rich Caruana, Ashish Kapoor

“The Computational Complexity of Structure-Based Causality”

Gadi Aleksandrowicz, Hana Chockler, Joseph Y. Halpern, Alexander Ivrii

“A Computational Challenge Problem in Materials Discovery: Synthetic Problem Generator and Real-World Datasets”

Ronan Le Bras, Richard Bernstein, John M. Gregoire, Santosh K. Suram, Carla P. Gomes, Bart Selman, R. Bruce van Dover

“Automatic Construction and Natural-Language Description of Nonparametric Regression Models”

James Robert Lloyd, David Duvenaud, Roger Grosse, Joshua B. Tenenbaum, Zoubin Ghahramani

“Pattern Discovery in Protein Networks Reveals High-Confidence Predictions of Novel Interactions”

Hazem Radwan Ahmed, Janice I. Glasgow

“A Latent Variable Model for Discovering Bird Species Commonly Misidentified by Citizen Scientists”

Jun Yu, Rebecca A. Hutchinson, Weng-Keen Wong

“Clustering Species Accumulation Curves to Identify Skill Levels of Citizen Scientists Participating in the eBird Project”

Jun Yu, Weng-Keen Wong, Steve Kelling

3:30 pm - 4:00 pm *Coffee Break*

4:00 pm - 6:00 pm **Invited Talks and Closing Discussion**

“Constructing a Continent-Scale Bird Migration Model to Understand Bird Decision Making”

Tom Dietterich, AAAI President and Oregon State University

“Big Mechanism”

Paul Cohen, Program Manager, Defense Advanced Research Projects Agency

“Ask not what the NIH can do for you; ask what you can do for the NIH”

Phil Bourne, Director of Data Science, National Institutes of Health

\*\* *will not be presented*