



# Sensor Informatics Participants

A. Labrinidis & A. Stefanidis

J. Srivastava, C. Faloutsos, P. Bauer, S. Zdonik,  
M. Cherniack, P. Chrysanthis, V. Megalooikonomou,  
V. Kalogeraki, D. Gunopulos, B. Prabhakaran,  
S. Das, W.-C. Lee, E. Rudensteiner, A. Ailamaki,  
F. Makedon, Y. Aloimonos, O. Wolfson,  
L. Gruenwald, S. Son, V. Zadorozhny, W. Aref,  
H. Kargupta, J. Yang, W. Du, A. Ouksel, J. Han,  
P. Schenermann, Y. Wu.



# Sensor Informatics

A person walks into a bar...  
...is brought to the hospital on time.

Unique aspects:

- Collection of devices, configured to serve a common goal (capturing snapshots of reality)
- Operational/functional constraints
- Unreliability and uncertainty
- Semi-infinite streams
- ...



# Sensor Informatics: Challenges

- Strong space and time component
- Adaptive systems
  - Failure management
  - Acquisitional query processing
  - Reconfiguration capability
  - Localized / distributed processing
- Query interfaces (declarative?)
- Computation in the presence of uncertainty in data and topology.
- Quality of service and resource trade-off (managing precision and resources)



# Sensor Informatics: Challenges+

- Context awareness (units part of network)
- Timely dissemination and processing
- Summarization / Integration
- Seamless integration of data with traditional data sources
- Learn, model, predict, monitor, repeat ad infinitum
- Uncertainty (the only certain thing)
  - Estimate and communicate
  - Model and tolerate
  - Latency



## Interaction: HSNI

- Pervasive computing
- Active vs. passive networks
- Query interface
- Seamless integration with existing interfaces

## Socioeconomic Issues

- Privacy, privacy, privacy
- Security
- Ability for large scale deployment
- Living with sensors, living without



# Sensor Informatics Take-Aways

## ■ Unique characteristics:

- Unreliability
- Adaptability
- Constraints
- Signal-based vs. Symbol-based processing

## ■ Input / Output Fora:

- NSF funding: from cutting to cross-cutting (ITR funding?)
- Community building: Sensor Informatics Conference?