

Syllabus

DS 320 Data Integration and Fusion

Tu Th 10:30AM - 11:50AM; Room: E206Westgate Bldg

Instructor: Yasser El-Manzalawy (Office Hours Tu Th 1:00PM-2:00PM; Room E342B)

TA: TBA

Course Goals and Objectives

Data science approaches to data analysis often require integration of data from multiple heterogeneous data sources. The ultimate goal of a data integration system is to offer uniform access to a set of autonomous and heterogeneous data sources. The goal of this course is to provide background information for students on the acquisition, processing, integration and fusion of data from heterogeneous data sources to support decision-making, situation awareness, predictive modeling, and scientific discoveries. Upon completion of this course the student should be able to:

- Explain key concepts, theories and algorithms for data integration and fusion
- Apply data integration techniques to enable building systems geared for flexible sharing and integration of data across multiple autonomous data providers
- Design and implement different data integration and/or fusion frameworks based on knowledge-based, probabilistic-based, and graph-based approaches
- Design and implement data and model based fusion models for a variety of real-world applications spanning various domains including Internet of Things (IoT), social networks, recommendation systems, and bioinformatics.

Course Materials

- Anhai Doan, Alon Y. Halevy, Zachary Ives. **Principles of Data Integration**. Morgan Kaufmann Publishers, 2012.
- Slides and other materials will be posted in Canvas

Grading Policy

- Assignments (20%)
- Mid-term Exam (20%)
- Final Exam (20%)
- Project (40%)

Course Policies

ASSIGNMENTS. Late homework will receive a penalty of 25% for each day after the due date.

ACADEMIC INTEGRITY. Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

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Counseling and Psychological Services at University Park (CAPS)
(<http://studentaffairs.psu.edu/counseling/>): 814-863-0395

Counseling and Psychological Services at Commonwealth Campuses
(<http://senate.psu.edu/faculty/counseling-services-at-commonwealth-campuses/>)

Penn State Crisis Line (24 hours/7 days/week): 877-229-6400
Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741