

Syllabus

CSCI 2270: TOPICS in DATABASE MANAGEMENT DATA MANAGEMENT for AI Spring 2025

This graduate seminar course will cover the state of the research and practice at the intersection of data management and artificial intelligence. We will explore the symbiotic relationship between AI and effective data management techniques by studying how machine learning techniques can solve database challenges, and the use of data systems to build scalable AI solutions. Specific topics of interest will be the role and use of vector databases and Large Language Models (LLMs) in AI and data management.

This class will be structured as a seminar with a semester-long project component. The students will present, review and discuss papers. As groups, they will also conduct a research project over the course of the semester. In addition, there will be several guest lectures by researchers and professional experts in the area.

Meetings	Noon — 2:20pm on Mondays
Room	CIT 241 (Swig)
Text	No textbook. Research papers and other online readings will be assigned.
Prerequisites	CSCI 1270 (Database Management Systems) or equivalent. Familiarity with AI/ML techniques preferred but not required.
Instructor	Ugur Cetintemel - ugur_cetintemel@brown.edu (CIT 437) Stan Zdonik - stan_zdonik@brown.edu (CIT 363)
Office Hours	By appointment requested via email or Edstem
Head TA	Jonathan Zhou - jonathan_zhou@brown.edu
Grad TA	Duo Lu - duo_lu@brown.edu
Assignments	- Weekly paper readings and reviews. - One or more research paper/topic presentations. - A semester-long project. This will typically be done as a group project. While we will be suggesting some initial ideas for possible projects, you will eventually be solely responsible for defining and carrying out your project. A typical project would involve investigating a research idea,

	realizing it and experimenting with how well it works. You will report your findings in the form of a research paper, present it to the rest of the class, and submit your final report along with any software/data you used/generated at the end of the semester.
Time Requirements	In addition to approximately 2.5 hours per week in class (~30 hours in total), students should expect to spend approximately 8-10 hours per week on readings, projects and presentations prep (100-120 hours in total). The overall time commitment for the course will be approximately 130-150 hours.
Grading (Tentative)	Paper reviews : 24% Paper presentation(s) : 16% Participation : 10% Final Project: 50% (proposal)
Incomplete Policy	We expect everyone to complete the course on time. However, we understand that there may be exceptional and unforeseeable factors beyond your control, such as major health problems and family crises, that prevent you from finishing the course on time. If you feel you cannot complete the course on time, please discuss with the instructor ASAP, and definitely before the end of the lecture period, the possibility of being given a grade of Incomplete for the course and setting a schedule for completing the course in the upcoming year.
Late Policy	This is an interactive seminar class. We expect all students to be attending all sessions. All tasks are expected to be done by the due date (unless special permission is approved <i>in advance</i> by the instructor) or no grade will be given.