Special Topics in Computing Science

CMPT 983 G3/419 D3 G100

Fintech and Artificial Intelligence

Simon Fraser University

Fall 2025

Instructor: Oliver Schulte

For course details such as scheduling, contact information, office hours etc., please see the course website at courses.cs.sfu.ca. Please note that we will use both the canvas site for this course and the courses.cs.sfu.ca site.

Overview

Information technology has potential to improve the financial services provided by our financial system. Digital financial services are often referred to as "fintech". The course is a seminar to study and discuss computer science research related to fintech. We will focus on two main areas:

1. Payment systems, with an emphasis on cryptocurrencies as digital currencies. Topics

include the technical features and foundations of cryptocurrencies.
2. Applications of large language models (LLMs) to finance problems, by analyzing financial text. In addition to learning about issues in finance, students will gain substantive experience applying LLMs.
3. Time permitting: computational models of financial system stability.

Objectives

- Introduce computer scientists to fundamental concepts in finance and financial transaction processing
- Study major applications of computer science concepts to finance (e.g., blockchain, cryptography, large language models, machine learning)
- Ability to read and discuss critically recent research at the intersection of computer science and finance
- Familiarity with current approaches to computational topics related to the financial system

The lectures will provide introduction to the necessary background. *The course is a seminar course, meaning that students are expected to give presentations.*

Prerequisites

The course has no formal prerequisites. Background in the following topics will be helpful.

- Blockchain
- Cryptography
- Large language models
- Machine learning related to large language models (e.g., reinforcement learning)

Grading and Expectations

Over half the course is devoted to student presentations and course discussions.

Grading

- Participation and Attendance 25%
- Homeworks (Exercises, quizzes, assignments) 10%
- Topic Presentation: 25%
- Final Project, Project Presentation: 40%.

Below is an outline to flesh out the expectations for each grade component. More details will be posted on the courses.cs.sfu.ca site.

Presentations

I encourage group presentations. All group members receive the same grade. The allotted time for a

presentation will depend on the size of the class. Groups will be given more time than individual presentations.

You will need to participate in two presentations.

- A topic presentation presents a topic from the lecture schedule. You should draw on the main resources provided, and some of the extra resources. You are free to do your own research and bring in extra sources.
- The final presentation of the project will show what you created and the results you obtained.

Projects

Every student should carry out a course project. I encourage group projects. I will suggest course projects, but you are free to design your own. A project has two components:

- A *project outline* due about three weeks before the project presentation. This will allow me to give you early feedback on your project plans.
- A *project presentation* on our last day of class. I will require you to attend a joint project presentation session, about 3 hours long. It will be scheduled for Dec 1 or Dec 3 depending on potential conflicts with other classes.

Homework

There will be some exercises, quizzes, and one or two assignments. The goal of homeworks is to engage students with some of the key technical content (e.g., writing a script to manage assets on a block chain, using a large language model for a finance-related task).

Participation and Attendance

Regular attendance and participation is important for the success of a seminar. Components of the class participation mark include the following.

- Attendance, especially at guest lectures.
- Participating in class discussion
- Responses to class material (e.g., posting a question for discussion before or after a class reading)