**Artificial Intelligence and FinTech Research**

A One-week Long Intensive Course

Turku School of Economics, University of Turku, Turku

Summer 2025 (25.-29.8.2025)

**1) Topic and Targeted Audience**

The Fintech revolution has disrupted how businesses operate, making technology a force changing the business landscape like no other. The ***general*** purpose of this course is to guide adjoining or related areas of research in accounting, especially the role of AI and Fintech in this field. Hence, from the theoretical perspective, we will try to develop *the role of related theories, research methods, and designs employed in empirical accounting and finance research*. In addition, from a practical perspective, we will extend *the ability to critically analyze, evaluate, and apply various research methods employed in empirical research, then conduct those mentioned methods in related research*.

Target audience for this course is Ph.D. students interested in research on AI and Fintech in accounting and finance. It has been designed for Ph.D. students, beneficial for business, economics, and related social sciences, to get familiar with current research in this field and take their first steps toward doing independent research on this topic. In contrast to other courses, we will cover fewer papers but more thoroughly than typical in such seminars. After completing the course, course participants will understand the papers’ main findings and have reviewed them critically. Also, they can develop research projects that add to this fascinating and relevant field.

**2) Structure**

The objective is to cover both classical accounting and finance theories and emerging technologies and how firm information (disclosure and reporting) helps investors’ trading decisions and managers’ corporate decisions. We also discuss emerging topics such as using textual analysis and machine learning to analyze firm information, e.g., SEC filings, corporate presentations, conference calls, and social media.

* To know about the course, please see **Video 1:** [*Outlook of Fintech and AI research*](https://www.youtube.com/watch?v=FGJ0F3kYhn8&list=PLe9soR795adVIevJpqXfICimJKOJSdCjK&ab_channel=SeanCao_Fintech)

To reach the above objectives, for the *theoretical perspective*, we will cover the below topics:

* Machine learning literature review and big data examples in finance and accounting
* Contribution potential of machine learning and AI to traditional finance and accounting
* Emerging technology opportunities in finance and accounting
* Unsupervised machine learning for clustering and dimension reduction
* Transfer Learning and Google BERT
* Supervised learning, grid search for model tuning
* Supervised learning, ensemble learning, and reinforcement learning
* Textual analysis and Natural Language Processing (NLP) in finance and accounting
* Image representation, processing, filtering, segmentation, and feature extraction
* Machine learning examples using financial image, voice and video data, and academic research
* Extended topics and optional sessions, such as blockchain and its application in accounting and finance
* Related academic papers will be covered

Besides the areas mentioned above, the course will cover a broad spectrum of transformative technologies and methodologies in AI and FinTech, providing essential tools and insights for advanced research in capital markets. This includes an exploration of emerging applications and innovative strategies that shape the future of finance and accounting.

* Exploring the evolution from traditional methodologies to innovative applications of AI in finance and accounting.
* Examining the latest developments and contributions of AI and fintech within the financial sector.
* A comprehensive introduction to the tools and technologies driving AI research in capital markets.
* A curated list of key learning resources to deepen understanding and proficiency in AI applications.
* Insights into the transformative impact of large language models like GPT and BERT on finance and accounting research.
* Strategies for crafting innovative research proposals in cutting-edge areas of fintech and AI.

A set of instructive videos outlines critical concepts for the *practical perspective* of the primary objectives. The objective of the lectures is to allow non-computer-science scholars to adopt machine learning to finance and accounting research smoothly.

* **Video 2:** [*Textual analytic tools in Accounting and Finance*](https://www.youtube.com/watch?v=TL10mnllsyo&list=PLe9soR795adVGNtNDhCa9R7vBt7ghSg1l&ab_channel=SeanCao_Fintech)

During the course, we will cover*unstructured qualitative data sources*, including:

1. Firm disclosure

*Textual data*

* Mandatory SEC filings, e.g, 10-k, 8-K, proxy statement, IPO Form S-1
* Voluntary SEC filings, e.g., conference call transcript
* Mandatory Mutual fund SEC filings, e.g., Form N-CSR

*Image data*

* Product/production images

1. Regulatory disclosure (comment letters)
2. Social media data
3. Analyst reports

**3) Grading and Examination**

Successful completion of the course and fulfilling the examination requirements are rewarded with 6 ECTS. The evaluation is based on the preparatory tasks, the final essay, and active participation during the session. No grades are given in the assessment (passed/failed).

The examination requirements are structured as a portfolio assessment. The assigned materials are split into main and background readings: videos, published review papers, and research papers (either published or working papers). Our focus will be on presenting and discussing research papers, and students must be prepared to discuss the main readings when we meet in class. Each seminar participant should expect to address the lecturer’s answers.

Students are expected to lead some discussions of related papers as an assignment. The presentations during the seminar will serve as an assignment and the final research work. The presenter of a paper must clearly describe the 4Ws:

* What issue the study examines (research),
* Why the topic is of interest (motivation, theory, and hypothesis development)
* What is the research design (sampling, research design, and empirical execution)
* What we learned from the study (practical and theoretical contributions, results, and explanations, do you believe the results or explanations are convincing to you?)

**4) Prerequisites and Admittance**

There are no prerequisites for participating in this course. Watching instructive videos would be enough. The maximum number of students is 25, and the participants will be selected based on KATAJA’s general instructions. There is no course fee. However, each student is responsible for travel expenses, accommodation, and meals.

*When and how to apply?*

The application deadline is 9.6. 2025, and students will be notified of their acceptance by 18.6.2025. The application (when accepted) is binding. In case you have to cancel, please inform us immediately.

*Course application form:*

Name: Degree:

Contact address: Email:

University: Department:

Discipline/Major:

Year when and where officially accepted as a doctoral student:

Research field/ Subject of the thesis:

The phase of doctoral studies:

Motives for participating in the course:

Please send your application with the information detailed below (curriculum vitae and application form) to course coordinator Hannu Schadewitz in one pdf document with the file name firstname\_lastname\_aifintech2025\_application.

**Instructor\*:** Sean S. Cao, Associate Professor of FinTech, AI and Capital Markets (with tenure), Robert H. Smith School of Business, University of Maryland

(<https://www.rhsmith.umd.edu/directory/sean-cao>, **Email:** scao824@umd.edu)

**Course assistant/tutor:** Doctoral Researcher Javad Rajabalizadeh, Turku School of Economics, University of Turku

(<https://www.utu.fi/en/people/javad-rajabalizadeh>, **E-Mail:** javad.j.rajabalizadeh@utu.fi)

**Course coordinator:** Hannu Schadewitz, Turku School of Economics, University of Turku

(<https://www.utu.fi/en/people/hannu-schadewitz>, **E-Mail:** hannu.schadewitz@utu.fi)

**5) Format**

One online kick-off session will be held on Aug 15, 2025, 1:00 pm to 6:00 pm.

Each of the following five days will entail seven periods of approximately 40-45 minutes per period:

Aug 25 10:00 am to 1:00 pm, 2:00 pm to 6:00 pm

Aug 26 10:00 am to 1:00 pm, 2:00 pm to 6:00 pm

Aug 27 10:00 am to 1:00 pm, 2:00 pm to 6:00 pm

Aug 28 10:00 am to 1:00 pm, 2:00 pm to 6:00 pm

Aug 29 8:00 am to 12:00 pm, 12:30 pm to 3:30pm.

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**\*** Dr. Cao is an Associate Professor of FinTech, AI and Capital Markets (with tenure) in the Robert H. Smith School of Business at the University of Maryland. He is also an affiliated professor at Harvard Business School (D^3 Institute). Dr. Cao’s research has been featured in the *Financial Times, CNBC, Bloomberg, The Guardian,* and *Quartz*.To date, Dr. Cao has given over 100 invited research talks at major research universities. Dr. Cao also serves as a guest associate editor at *Management Science.* In 2020 and 2022, Dr. Cao co-chaired conferences with the *Review of Financial Studies* (dual submission) on Fintech and Machine Learning (<https://sites.google.com/view/seancao/home>).

Dr. Cao is deeply committed to helping business communities through his research. He has been honored with the award by the Deloitte Initiative for AI and Learning (DIAL), leading to develop AI solutions for social inclusion and climate change. For teaching, Dr. Cao has been invited externally by major research universities to teach short-term doctoral seminars on AI and Fintech in finance and accounting. He also runs [a tutorial blog site](https://www.youtube.com/channel/UCnq6zygOyu6w8Zbn3Kl9lPA/playlists) (YouTube: Sean Cao\_Fintech or Bilibili ID: Seancao\_) that aims to help scholars outside of computer science smoothly adapt machine learning to finance and accounting research.

**Research Fellowships, Awards and Keynote talks**

* Award recipient of Deloitte Initiative for AI and Learning for developing trustworthy AI for social equity and climate change
* Best Paper Award Winner (with co-authors) in:

1. American Association of Individual Investors (AAII), 2022 Midwest Finance Association,
2. 2022 Global AI Finance Conference,
3. 2022 CFRC Conference, PBC School of Finance, Tsinghua University,
4. 2022 Annual Conference in Digital Economics, ACDE,
5. Asset Pricing, 2022 SFS Cavalcade Asia-Pacific Conference.

*See:* [*From Man vs. Machine to Man + Machine: The Art and AI of Stock Analyses*](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3840538)

* Winner of the AMTD FinTech Centre Prize (with co-authors) in 2022 Asian Finance Association Conference, **and** Best Paper Award Winner (with co-authors) in 2021CAPANA Research Conference

*See:* [*How to Talk When Machines are Listening: Corporate Disclosure in the Age of AI*](http://conference.nber.org/sched/AIf20)

* FMA 2021 Best Paper Semi-finalist in FinTech (with coauthors), Can Machines Understand Human Decisions: Dissecting Stock Forecasting Skill?
* *Keynote Speaker*for Pacific-Basin Finance Journal (PBFJ) special issue conference on “Artificial Intelligence and Machine Learning in Corporate Finance”, December 2023
* *Keynote Speaker* for “Machine Learning, AI and FinTech in Capital Market” at Stock Exchange of Thailand, Bangkok, Thailand, July 2023
* *Keynote and Panel Speaker* for “Latest NLP models in capital market research” at Technical University of Munich (Technische Universität München), Germany, Nov 18 - 19, 2021
* *Panel Speaker*at “2023 AAAI Conference on Artificial Intelligence”
* *Panel Speaker* at the *Academy of Management conference* for “Textual and Voice Analysis for CEO Traits and Emotion: Challenges and Future Research Directions”, August 2022
* *Panel Speaker* at “Toronto Rotman CPA Conference” (with *2,000* FinTech professionals and industry participants), Canada

*See:* [*video*](https://www.youtube.com/watch?v=z52PpQCrPYw&ab_channel=SeanC)broadcasted on Feb 17, 2021