Python Coding for Accounting and Finance Research

Instructor: Dr. Leonard Leye Li

Dr. Leonard Li is a Senior Lecturer in the School of Accounting, Audit & Tax at *UNSW Sydney*, and a visiting scholar at Foster School of Business, *University of Washington*. His research focuses on connecting accounting to the real world, analysing its role in social and political environments such as pandemics, global disruptions, and legal frameworks. He has a range of research interests including voluntary disclosure, shareholder litigation and stock price crash risk. He has published in leading accounting journals, including *Journal of Accounting Research*, *Journal of Accounting and Economics*, and *Accounting, Organizations and Society*. In addition, several of his publications have been featured in prestigious industry practitioner journals, stimulating dialogue and innovation among practitioners, enhancing the application of academic research to solve real-world problems.

Leonard is at the forefront of integrating data analytics and machine learning within business education. This is reflected in the teaching and development of many courses that he developed and taught in *UNSW* on data analytics. He also teaches introductory accounting courses in both *UNSW* and *University of Washington*, which employs innovative and flexible teaching methods that actively engage students and foster an interest in accounting.

Throughout his career, Leonard has dedicated his time to helping the next generation of researchers. He has assisted numerous early-career researchers in publishing in prestigious journals and have set high-quality research directions through his roles as an active reviewer in over 30 prestigious international journals and as the Deputy Editor of *Accounting & Finance*. He is a co-founder of the Early Career Researchers Support Network (ECRSN), a network that aims to help early-career researchers to improve their social wellbeing and academic performance. This initiative supports researchers who have limited access to seminars and resources since the COVID-19 pandemic, enabling them to join the academic community and attend online master classes. This program has attracted over 100 participants from across Australia, New Zealand, and around the world.

Overview

This course is designed to equip doctoral students and early career researchers in accounting and finance with foundational and practical skills in Python programming, tailored specifically for empirical research. We will cover core programming concepts, data manipulation techniques, and statistical analysis methods using Python. Emphasis will be placed on applications to real-world accounting and finance data, such as Compustat, CRSP, and textual data. Through hands-on assignments and coding exercises, students will learn how to efficiently clean data, perform statistical testing, and visualize results. The goal is not only to become competent in coding but also to use Python as a tool to enhance the quality and efficiency of academic research.

Reading List

Academic papers using Python for financial research (provided per topic).

There are no required texts for this course. The following books are useful references:

VanderPlas, J. (2016). Python Data Science Handbook. O'Reilly Media.

Chen, D. (2020). Pandas for Everyone. Addison-Wesley.

Documentation and tutorials from Python.org and pandas.pydata.org.

Participants should bring their own laptops, with necessary software pre-installed with the instructions that we provide (i.e., Anaconda Python Distribution).

Topics

Module 1: Introduction to Python Fundamentals in Research

- Python Installation and Environment Management (before the class)
- Basic Syntax, and Data Types
- Functions and modules
- Control Flows
- Summary project 1

Module 2: Data Science with Pandas

- Introduction to pandas dataframe
- Handling missing data and duplicates
- Merging, filtering, and reshaping datasets
- Time series formatting and manipulation
- Descriptive statistics
- Grouping and summarizing data
- Data visualization with matplotlib and seaborn
- Summary project 2

Module 3: WRDS with Python and Textual Analysis

- WRDS with Python
- Textual Analysis Basics
- Summary project 3

Module 4: Empirical Methods in Python

- Basic panel data analysis
- Linear regression
- Introduction to Machine Learning
- Summary project 4

Assessment

Final Research Project (Individual): 80%

A research-style project using Python to analyse a finance or accounting question. Includes a written report and code submission.

In-Class Participation: 20%

Active involvement in sessions, occasional short presentations of assignment findings or literature reviews using code.