Andrew Clark

Department of Economics

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Education

- B.S. Business Administration with a concentration in Accounting, Summa Cum Laude, The University of Tennessee at Chattanooga, 2015
- M.S. Data Science, Southern Methodist University, 2017
- Ph.D. Economics with a concentration in International Monetary Policy, University of Reading, 2022 (expected)

Certifications

- Certified Analytics Professional - Feb 2018 – Present License 11225053
- American Statistical Association Graduate Statistician - Jan 2018 – Dec 2025
- AWS Certified Solutions Architect - Associate - Apr 2018 – Apr 2020

Work experience

- Data Economist - December 2018 - present
    - BlockScience - Richmond, Virginia
    - Create ecosystem economic design specifications
    - Simulate the designed ecosystem using Python-based methods.
    - Employ mathematical engineering technologies to create novel solutions to solve business problems.
- Principal Machine Learning Auditor - September 2017 - November 2018
    - Capital One - Richmond, Virginia
    - Build machine learning applications to reinvent the audit process utilizing Python and AWS.
    - Establish approaches for auditing and validating machine learning algorithms leveraging OCC 2011-12 and existing guidance along with original research.
    - Create and present departmental wide training on machine learning.
    - Perform machine learning algorithm audits.

- IT Auditor/Data Scientist - May 2015 - August 2017
  - Astec Industries - Chattanooga, Tennessee
  - Designed and built a continuous auditing infrastructure over Astec's numerous global subsidiaries using SQL and Python.
  - Developed custom analytic scripts for corruption/compliance and anomalous journal entry testing using SQL, Python, pandas, and scikit-learn.
  - Built Internal Audit specific programs in Python, such as change management hashing tools, and time-saving spreadsheet aggregators
  - Researched the application of statistical and machine learning methods for use in the auditing domain. An example of which is the development and deployment of an unsupervised clustering algorithm across the full population of journal entries.
  - Conducted security audits across Astec Industries' subsidiaries focusing on SQL Server, Windows Server, and Active Directory best practices.
  - Created cybersecurity audit framework targeting company and industry-specific risks based off of NIST's Cybersecurity framework and the Center for Internet Security's Critical Security Controls.
  - Was responsible for all IT SOX audits and source code audits.
  - Conducted ITGC audits across the corporation.
- Internal Audit Intern - August 2014 - April 2015
  - Astec Industries - Chattanooga, Tennessee
  - Began implementing a fraud analytics program with ODBC connections to subsidiary databases, and performed SOX and financial audits.
  - Performed financial substantive testing for external auditors
- Internal Audit/Continuous Improvement Intern - Summer 2014
  - Covenant Transportation - Chattanooga, Tennessee
  - Wrote process improvement reports, one of which was projected to save CTG approximately $500,000 per year.
- Audited the majority of controls for SOX first round testing

Publications (selected)

- **The Machine Learning Audit - CRISP-DM Framework**
  - Andrew Clark. (2018). "The Machine Learning Audit - CRISP-DM Framework." *ISACA Journal Volume 1, 2018*.
- **Putting Machine Learning in Perspective**
  - Andrew Clark. (2018). "Putting Machine Learning in Perspective." *ISACA Journal Author Blog, 2018*.

- ○ **Machine Learning Security Considerations and Assurance**
  - ○ Andrew Clark. (2018). "Machine Learning Security Considerations and Assurance." *IT Business Net, 2018*.
- ● **Empower Auditors to Think Big Picture on AI**
  - ○ Andrew Clark. (2019). "Empower Auditors to Think Big Picture on AI." *ISACA Now Blog, 2019*.

Talks (selected)

- ● **Where Open Source Meets Audit Analytics**
  - ○ December 08, 2016
  - ○ Presentation at MISTI ITAC, New Orleans, Louisiana
- ● **Machine Learning for Auditors: What you need to know**
  - ○ May 02, 2017
  - ○ Presentation at ISACA North America CACS, Las Vegas, Nevada
- ● **The Machine Learning Audit**
  - ○ October 27, 2017
  - ○ Presentation at Dallas IIA SuperConference, Dallas, Texas
- ● **The Machine Learning Audit - keynote**
  - ○ December 01, 2017
  - ○ Presentation at MIS ITAC 2017, Austin, Texas
- ● **Active Directory for Auditors**
  - ○ April 30, 2018
  - ○ Presentation at ISACA North American CACS 2018, Chicago, Illinois
- ● **Machine Learning for Auditors**
  - ○ April 30, 2018
  - ○ Presentation at ISACA North American CACS 2018, Chicago, Illinois
- ● **Reinventing Auditing with Machine Learning**
  - ○ September 03, 2018
  - ○ Presentation at REWORK - AI in Finance Summit, New York City, New York
- ● **Machine Learning: What Assurance Professionals Need to Know**
  - ○ November 01, 2018
  - ○ Presentation at ISACA Webinar, Richmond, Virginia