15 The FinCEN AI System: Finding Financial Crimes in a Large Database of Cash Transactions

H. G. Goldberg
US Department of the Treasury

T. E. Senator
National Association of Securities Dealers

15.1 Introduction

This chapter discusses the FinCEN Artificial Intelligence System (FAIS) and its continued development as a case-study of AI analysis of a financial database. We first present a brief description of the system, along with an update of what has been accomplished since the system was reported in (Senator, 1995). The version of FAIS reported there is V2.0, which has been in operation since December 1994. We next discuss some generally applicable conclusions regarding knowledge discovery in databases (KDD), in particular, the essential role of data preparation and database transformation steps in knowledge discovery systems. Finally, we discuss our plans for system improvements and future development in the context of an expanded agency mission, including not only incremental changes but also a major redesign, referred to as V3.0 of FAIS.

15.2 FAIS: Case Study and Progress Report

The Financial Crimes Enforcement Network (FinCEN) is an agency of the US Treasury Department whose mission is to establish, oversee, and implement policies to prevent and detect money laundering, in support of federal, international, state, and local law enforcement. A key data source available to FinCEN is reports of large cash transactions made to Treasury according to terms of the Bank Secrecy Act (BSA) and other, related legislation. FAIS links and evaluates

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1 The authors of this chapter are employees of the Financial Crimes Enforcement Network of the US Department of the Treasury, but this chapter in no way represents an official policy statement of the US Treasury Department or the US Government. The views expressed herein are solely those of the authors. This chapter implies no general endorsement of any of the particular products mentioned in the text.

all reported transactions for indications of suspicious activity characteristic of money laundering, with the objective of identifying previously unknown, potential high value leads for follow-up investigation and, if warranted, prosecution.

FAIS integrates intelligent software and human agents in a co-operative discovery task on a very large data space. It is a complex system incorporating several aspects of AI technology, including rule-based reasoning and a blackboard. FAIS consists of an underlying database, a graphical user interface (GUI), and several pre-processing and analysis modules. The database functions as a blackboard and is implemented in Sybase. The GUI is implemented in Neuron Data’s Open Interface. The suspiciousness evaluation module is a rule-based reasoner implemented in Neuron Data’s Nexpert Object (now called Smart Elements). Alta Analytics’ NetMap provides a link analysis module. Other FAIS programs, which asynchronously load and pre-process the data, are written in SQL and C. FAIS runs on a network of Sun servers and workstations under the UNIX operating system.

FAIS has been in operational use at FinCEN since March 1993 by a small group of analysts, processing approximately 200,000 transactions per week. FAIS operates in two modes: data-driven and user-directed. Over 500 investigative support reports, referring to over 1500 individual subjects, have resulted from using the system. These reports reflect transactions on the order of $1.5 billion in potential laundered funds. FAIS’s development is continuing, to remain current with changes in money laundering techniques and statutes, to increase its effectiveness, to add additional features, and to support FinCEN’s policy and regulatory responsibilities in addition to detection and investigative support.

FAIS’s unique analytical power arises primarily from a transformation of view of the underlying data from a transaction oriented perspective to a subject (i.e., person or organization) or account oriented perspective. FAIS enables a process that was not feasible without automation, both because of the data volume and the need to link together related transactions prior to evaluation. FAIS permits analysts to focus on significant items of interest in the database, enabling more detailed and complex analyses on these items. FAIS allows law enforcement to derive increased value from the reported data, to ensure that all reported transactions are evaluated at least once, and to reduce the likelihood of missing any significant reported illicit financial activity.

In this section, a summary of the system as previously reported is followed by an update of subsequent, recent efforts.

15.2.1 FAIS V2.0 Summary

This section describes FAIS V2.0 – its task, architecture, and use.