■ 연구논문 요약문

논문제목	Detecting financial misstatements with fraud intention using multi-class cost-sensitive learning
게재정보	Expert Systems With Applications
개요	We develop multi-class financial misstatement detection models to detect misstatements with fraud in- tention. Hennes, Leone and Miller (2008) conducted a post-event analysis of financial restatements and classified restatements as intentional or unintentional. Using their results (along with non-misstated firms) in the form of a three-class target variable, we develop three multi-class classifiers, multinomial lo- gistic regression, support vector machine, and Bayesian networks, as predictive tools to detect and classify misstatements according to the presence of fraud intention. To deal with class imbalance and asymmetric misclassification costs, we undertake cost-sensitive learning using MetaCost. We evaluate features from previous studies of detecting fraudulent intention and material misstatements. Features such as the short interest ratio and the firm-efficiency measure show discriminatory potential. The yearly and quarterly context-based feature set created further improves the performance of the classifiers.
연구결과	**Table 10** Classification result using MetaCost. | Classifier	Accuracy	G-mean	% Misstatments detected	Cost 1	Cost 2	Cost 3
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MLogit	0.869	0.698	92%	69.3	85.9	66.1
SVM-Lin	0.854	0.656	90%	73.8	89.9	70.8
BayesNet	0.825	0.584	76%	113.7	94.8	120.5	
활용분야 및 기대효과	Financial fraud has substantial economic consequences for any economy. Management that intentionally misleads users of their financial statements will invoke considerable financial and social costs. While researchers have extensively analyzed the causes, mo- tivations, and consequences of financial misstatements and earn- ings manipulation, we are unaware of any research that predicts accounting fraud by managerial intent. Hennes et al. (2008) sug- gests that it is important to distinguish intentional from uninten- tional misstatements. Unlike unintentional financial misstatements, intentional financial misstatements are likely to cause severe prob- lems and in turn shake the confidence in our financial markets. Using the post-event analysis in Hennes et al. (2008), we de- velop three-class financial misstatement detection models. The models are developed to detect financial misstatements and clas- sify misstatements according to fraud intention. To the best of our knowledge, the present study is the first multi-class predic- tive study that attempts to detect and classify financial misstate- ments according to fraud intention. We also apply multi-class cost- sensitive learning using MetaCost to deal with class imbalances and asymmetric misclassification costs. Variables related to accruals quality, such as changes in inven- tory along with industry-level and organizational context-based measures, have shown discriminatory power. The

	firm-efficiency measure and market variables such as the short interest ratio are also found to be useful to detect misstatements and deliberate fraud.