**Paper No:** 1

**Title:** A Convolutional Approach for Misinformation Identification.

**Proceeding:** Proceedings of the 26th International Joint Conferences on Artificial IntelligenceOrganization, Melbourne, Australia.

**Date:** August 19-25, 2017.

**Authors:** Feng Yu, Qiang Liu, Shu Wu, Liang Wang and Tieniu Tan.

**Method:** MetaHeuristics

**Algorithm:** Convolutional Neural Network and Paragraph vector.

**Verification:** Offline verification of results.

**Data Set:** Weibo and Twitter.

**Where it is applied:** Intermediate side.

**Metrics:** Accuracy, Precision, Recall, F1

**Comparison method:** Decision Tree Rank, Support Vector Machine-RBF, Decision Tree Classifier, Random Forest Classifier,SVM-TS, Gated Recurrent Unit 2.

**Problem Definition:**

Given a set of events, the task is to identify whether an event is misinformation or not by analyzing a sequence of microblog posts of the event. (Note: an event is nothing but a sequence of correlative microblog posts with valid timestamp)

**Paper Overview:**

A novel method called CAMI(Convolutional Approach for Misinformation Identification) using CNN (Convolutional Neural Network) is introduced. An unsupervised method called paragraph vector is used to learn representation of input micro blog posts and supervised method called CNN is used to automatically obtain key features of both misinformation and truth information.

**Proposed model (CAMI):**

1. Splitting all correlative microblog posts of an event intoseveral groups based on time window.
2. Learning representation for each group via paragraphvector. Prediction is made via softmax.
3. Modeling high-level interactions by CNN.

--------------------------------------------------------------------------------------------------------------------------------------

**Paper No:** 2

**Title:** CSI: A Hybrid Deep Model for Fake News Detection.

**Proceeding:** Proceedings of the 2017 ACM on Conference on Information and Knowledge Management, Singapore.

**Date:** November 06-10, 2017.

**Authors:** Natali Ruchansky ,SungyongSeo , Yan Liu.

**Method:** MetaHeuristics

**Algorithm:** Recurrent Neural Network, doc2vec, Adam Algorithm

**Verification:** Offline verification of results.

**Data Set:** Weibo and Twitter.

**Where it is applied:** Intermediate side.

**Metrics:** Nothing in particular (Proposed Model detects whether the news is trustworthy or not)

**Comparison method:** Decision Tree Rank, Decision Tree Classifier, Support Vector Machine -TS, Gated Recurrent Unit 2, Long Short Term Memory-1, CI, CI-t

**Paper Overview:**

This paper will identify fake news and groups of suspicious users. There are 3 generally agreed upon characteristics of fake news: the *text* of an article (linguistic), the user *response* it receives(like face-book comments), and the *source* (behaviour of users who promote the article). In this work, we propose a model called CSIthat combine all three characteristics for a more accurate and automated prediction. CSI consists of 3 modules namely Capture, Score and Integrate. Capture module (make use of text and response)is used for extracting temporal representation of news articles, score moduleis used for scoring the behaviour of users, integrate module will make use of both the above modules to determine whether the article is fake or not. Capture module uses Recurrent Neural Network to extract the temporal representation of articles. Score module can be constructed using information from the user’s social network profile.

--------------------------------------------------------------------------------------------------------------------------------------

**Paper No:** 3

**Title:** Real-time Rumor Debunking on Twitter.

**Proceeding:** Proceedings of the 24th ACM International on Conference on Information and Knowledge Management, Melbourne, Australia.

**Date:** October 18-23, 2015.

**Authors:** Xiaomo Liu , ArminehNourbakhsh , Quanzhi Li , Rui Fang , Sameena Shah.

**Method:** MetaHeuristics and Heuristics

**Algorithm:** J48 decision tree

**Verification:** Offline verification of results.

**Data Set:** Twitter

**Where it is applied:** Intermediate side

**Metrics:** Nothing in particular (Proposed Model detects whether the news is trustworthy or not)

**Comparison method:** Castillo and Yang’s algorithm in their corresponding research work

**Paper Overview:**

In this paper, a systematic methodology is proposed to mine language features like people's opinion, find witness accounts, derive underlying belief from messages, use sourcing, network propagation, credibility and other user and meta features to debunk rumours. The initial meta-data associated with incoming tweets are only considered in this paper. Certain meta-data like re-tweets and likes are not considered in this paper like in earlier research work. The reason why the above meta-data is not considered is because we cannot track all the twitter re-tweets because of twitter rate limitation.

The proposed predictor will find whether the event (an event is the collection of tweets discussing about the same topic) is true or false at time t.

**Features considered:**

They proposed six categories of verification features as given below,

1. Source Credibility – Is trusted news account, Is trusted news url, client application name
2. Source Identity – Profile has person name, profile has location, Profile includes professional information.
3. Source Diversity - Deduped tweets' text is dissimilar
4. Source Location and witness – If tweet location matches event location, If profile location matches event location, Has witness phrase “I see”, “I hear”
5. Message belief – Supporting or negation or neutrality or question
6. Event propagation – Event topic, retweet, retweet graph size/depth, max reply, hashtag, h-index, mention.

**Evaluation:**

Following assessments are done by the authors in the research work:

1. Performance comparison with the two baseline algorithms on the dynamic prediction task.
2. Timeliness comparison of the proposed automatic method in contrast to human verification.
3. Analysis of the most effective features for early and subsequent predictions.

**Parameters considered in different papers:**

**Paper No:** 1

**Title:** Detect Rumors Using Time Series of Social ContextInformation on Microblogging

Websites

**Author:** Jing Ma,Wei Gao,Zhongyu Wei,Yueming Lu, Kam-Fai Wong

**Date:** October 18-23, 2015

**Proceeding:** Proceedings of the 24th ACM International on Conference on Information and

Knowledge Management.

**Content-based features:**

1. LDA-based topic distribution of microblogs with 18 topics
2. Average length of microblogs
3. # of positive (negative) words in microblogs
4. Average sentiment score of microblogs
5. % of microblogs with URL
6. % of microblogs with smiling (frowning) emoticons
7. % of positive (negative) microblogs
8. % of microblogs with the first-person pronouns
9. % of microblogs with hashtags
10. % of microblogs with @ mentions
11. % of microblogs with question marks
12. % of microblogs with exclamation marks
13. % of microblogs with multiple question/exclamation marks

**User-based features:**

1. % of users that provide personal description
2. % of users that provide personal picture in profile
3. % of verified users
4. % of verified users of each type, e.g., celebrities
5. % of male (female) users
6. % of users located in large (small) cities
7. Average # of friends of users
8. Average # of followers of users
9. Average # of posts of users
10. Average days users’ accounts exist since registration
11. Average reputation score of users (i.e., followers/followees ratio)

**Diffusion-based features:**

1. Average # of retweets
2. Average # of comments for Weibo posts
3. # of microblogs