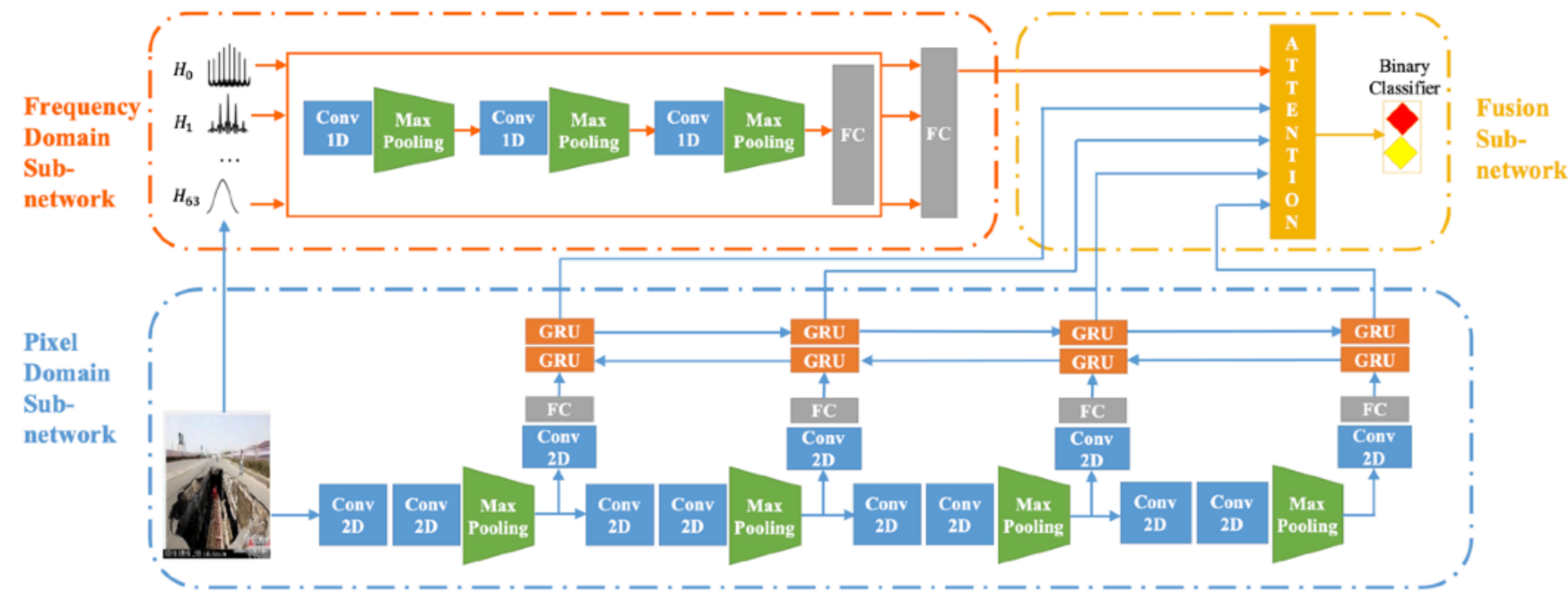


# Introduction

## MVNN framework

- To sum up, propose a Multi-domain Visual Neural Network (MVNN) framework, which can learn effective visual representations by combining the information of frequency and pixel domains for fake news detection.
- model consists 3 main components:
  - a frequency domain sub-network
  - a pixel domain sub-network
  - a fusion subnetwork



# Problem Formulation

## Fake-news Definition

- *Definition 1: Fake news:* In the context of microblog, a piece of fake news is a news post that is intentionally and verifiably false.
- *Definition 2: Fake-news images:* A fake-news image is an image attached to fake news.
- **Problem 1:** *Given a set of news posts  $X = \{x_1, x_2, \dots, x_m\}$ , corresponding images  $I = \{i_1, i_2, \dots, i_m\}$ , and labels  $Y = \{y_1, y_2, \dots, y_m\}$ , learn a classifier  $f$  that can utilize the corresponding image to classify whether a given post is fake news ( $y_t = 1$ ) or real news ( $y_t = 0$ ), i.e.,  $\hat{y}_t = f(i_t)$ .*