1 Dynamic Pipeline

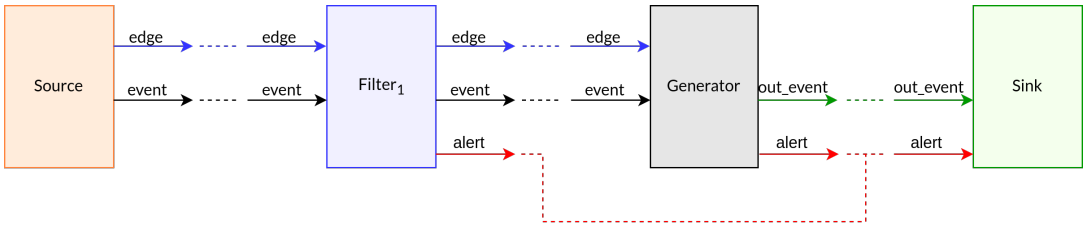

Figure 1: Pipeline Schema

Description of the channels:

- `edge`: only edge dedicated channel
- `event`: events channel
- `alert`: direct channel from the filters (in particular the filter worker) to the sink (it does not go through the Generator, although it has it to be able to give it to the filters so that they are able to write on it)
- `out_event`: direct dedicated event channel between Generator and Sink.

2 Fraud Patterns

2.1 Fraud Pattern I - Card Cloning

So far, the algorithm (pseudocode) to detect this kind of fraud pattern is the one shown in the algorithm **??**. Note that S refers to the filter's subgraph and e_{new} is the new incoming edge belonging to the filter, such that it is a opening interaction edge, since in the case it is a closing interaction edge, we do not perform the CheckFraud().

Algorithm 1 CheckFraud(S, e_{new})

Require: S is the subgraph of edges of the filter (sorted by time)
Require: e_{new} is the new incoming opening interaction edge belonging to the filter

```
fraudIndicator ← False
i ← |S|
while i > 0 and fraudIndicator = False do
    e_i ← S[i]
    t_min ← obtain_t_min(e_i, e_new)
    t_diff ← e_new.start − e_i.end
    if t_diff < t_min then
        createAlert(e_i, e_new)
        fraudIndicator ← True
    end if
    i ← i − 1
end while
```

Other options & justification