Following the trail Scientists in Switzerland say they have devised software that can swiftly trace terror suspects, computer viruses, rumour-mongering and even infectious diseases back to their source.

"Using our method, we can find the source of all kinds of things circulating in a network just by 'listening' to a limited number of members of that network," says researcher Dr Pedro Pinto of Lausanne's Federal Polytechnic (EPFL).

The algorithm can fast-track the route taken by the information to arrive back at its original source.

A key factor is using the time at which the data is passed from sender to recipient, to help investigators follow the path as directly as possible and eliminate false trails.

Publishing in the scientific journal Physical Review Letters (http://prl.aps.org/), Pinto's team tested the algorithm on a known data maze to see if the tool could pinpoint the individuals behind the September 11 attacks on the United States.

"By reconstructing the message exchange inside the 9/11 terrorist network extracted from publicly released news, our system spit out the names of three potential suspects - one of whom was found to be the mastermind of the attacks, according to the official enquiry," he says.
Taking social networking sites as another example, Pinto says individuals could use the algorithm to find out who had started a rumour posted to 500 contacts by looking at posts received by just 15 to 20 of them.

The same algorithm could be used to identify the origin of unwanted online messages (spam) or a computer virus, says Pinto, who is based at EPFL's Laboratory for Audiovisual Communications.

The innovation can also be used to help epidemiologists, he says.

Pinto and colleagues also traced the source of a cholera outbreak in South Africa after applying the formula to water and transport networks.

He adds the maths could also be harnessed by advertisers specialising in so-called viral online marketing campaigns, while also making it easier to spot them in advance.

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