

# **The origin and future of spam and other online intrusions**

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# The History of Digital Spam

1898

**THE SPANISH PRISONER.** The New York Times reports of unsolicited messages circulating in association with an old swindle.

1978

**ARPANET.** The first reported case of email spam is attributed to Digital Equipment Corporation and circulated to 400 ARPANET users.

1995

**SEARCH ENGINES.** Web content spam and link farms are common forms of spamdexing, the manipulation of Web search result ranking.

2005

**FAKE REVIEWS.** Giants of e-commerce like Amazon and Alibaba fight the manipulation of product popularity by opinion spam.

2016

**FALSE NEWS.** Spam Websites are created to deliberately propagate disinformation news in politics, health, and social issues.

1898  
2018



**Early 1900s**

**POST MAIL.** Advertisement based on unsolicited content has been mailed to our doors by Post Mail services for over a century!



**Mid 1990s**

**THE EMAIL EPIDEMIC.** A growing fraction of emails is spam. Platforms and ISPs start investing in spam filtering techniques.



**2000s**

**SOCIAL NETWORKS.** The rise of Facebook, Twitter, and Reddit leads to new opportunities for spammers to reach billions of Social Web users.



**2010**

**SOCIAL BOTS.** Millions of accounts operated by software populate social media to carry out nefarious spam campaigns.



**2018+**

**AI SPAM.** Systems based on AI can manipulate reality, producing indistinguishable alternatives. AIs can also be target of manipulation and spam to elicit behaviors of the AI system or of its users.

The evolution of spam as pictured in CACM. Credit: Emilio Ferrara

From a confidence trick originating in the late 19th century, to sophisticated AI that can manipulate reality, recreating anyone's face or voice with almost pinpoint accuracy—spam has come a long way.

But what does the future of digital spam look like, what risks could it pose to our [personal security](#) and privacy, and what can we do to fight it?

In a new paper, which appeared in the August 2019 issue of *Communications of the ACM (CACM)*, Emilio Ferrara, a USC research assistant professor in [computer science](#) and research team leader at USC Viterbi's Information Sciences Institute, tracks the evolution of digital spam and explores its complex, and often surprising, history.

"The fight against spam is a constant arms race," said Ferrara, who specializes in computational social sciences and is an expert in social media bots. "Scams not only exploit technical vulnerabilities; they exploit human ones."

Social media spam bots, which automatically produce content and interact with humans, have allowed spammers to scale their operations to an unprecedented level. (Ferrara explores this in his 2016 CACM paper, *The Rise of Social Bots*).

Since bots have been used for a variety of nefarious scenarios, from manipulation of political discussions to the spread of conspiracy theories and false news, the stakes are high. In the future, Ferrara believes that deepfake technologies could be abused by well-resourced spammers to create AIs pretending to be human.

## Milestones in Spam History:

- The term "spam" is internet slang that refers to unsolicited commercial email (UCE).
- The first reported case of spam occurred in 1898, when the New York Times reported unsolicited messages circulating in association with an old swindle.
- The first reported case of email spam occurred in 1979, attributed to Digital Equipment Corporation and circulated to 400 users of ARPANET, the precursor network of the modern internet.
- The term "spam" was coined in 1994, based on a now-legendary Monty Python's Flying Circus sketch, where a crowd of Vikings sings progressively louder choruses of "SPAM! SPAM! SPAM!"

## Facts:

- Billions of spam emails are sent every day.
- Email spam "detection algorithms" are approximately 98% accurate, but new breeds of spam are continually evolving.
- Last year, Facebook said it deleted 1.23 billion [spam](#) posts in 2018's third quarter.

Provided by University of Southern California

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