ＺＹ１２－０５　論文要旨説明書

報告論文のタイトル：Should ISPs be liable for negative externalities of botnets?

報告者・共著者（大学院生は所属機関の後に（院生）と記入してください.）

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論文要旨（800 字から 1200 字，英文の場合は 300 から 450 語）

A botnet is a network of computers under the control of an on-line attacker. It is a popular method to carry out a wide range of criminal services on the internet including sending spam, phishing, on-line fraud, and denial-of-service attacks, and thus is an important threat to cybersecurity. Removing botnet malware from individual users' computers is difficult because the malware usually does not cause any damages to its host and thus users do not realize that their computers are infected by the malware and are a part of a botnet.

Several researchers argue that Internet Service Providers (ISPs) should be liable for damages caused by their customers' computers consisting of botnets. The rationale is that imposing indirect liability on ISPs is consistent with conventional tort law principles. ISPs are the best able to remove botnets from their networks, but they usually do not have an incentive to do so voluntarily. Therefore, imposing liability on ISPs can be desirable to secure the network.

This paper evaluates ISP liability for violations of cybersecurity based on an economic model examining its effects on social welfare. In the model, a monopolistic ISP provides network access, and a continuum of users decides whether or not to pay the access fee and to take precautions against malware. There are both positive and negative externalities in the network. All on-line users create positive externalities, but a part of on-line users who do not take precautions create negative externalities because their computers are vulnerable to botnet malware. The monopolistic ISP can secure its network by taking costly effort to clean up botnet malware from users' computers or by simply disconnecting the access of users taking no precautions.

The results of model analysis show that imposing liability on the monopolistic ISP can decrease social welfare if the cleanup cost is not sufficiently low. In that case, the equilibrium access fee becomes so high that both the ISP's profits and consumer surplus decrease compared to the case that the ISP does nothing against botnets. Moreover, the ISP can have an incentive to disconnect the access of users taking no precautions, whether or not there is liability. On the other hand, if the cleanup cost is sufficiently low, the ISP can have an incentive to voluntarily clean up botnet malware even without liability.