

# Shining a light on the hidden shadows of the internet

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Credit: AI-generated image ([disclaimer](#))

The dark web began as an anonymous communication channel for the US government but is now a term used by the media and in Hollywood movies to refer to hidden online services where people primarily buy and sell items such as illegal drugs or distribute censored content.

However, the dark web is becoming increasingly popular with [internet users](#) who simply want to safeguard their privacy online.

Computer Security expert, Professor Sanjay Jha from UNSW School of Computer Science and Engineering, says that while there is the perception that the dark web is mainly a hub for criminal activity, there are many other reasons why someone may use it.

"The name, dark web, is usually painted with a negative image, but in fact there are uses of the dark web which allows you to maintain anonymity," says Prof Jha.

"Many journalists and political activists use the dark web as a safe place for free speech."

## **Deep diving into the layers of the internet**

The internet is known to have three layers. The first is the most publicly available part of the internet and what people interact with most on an everyday basis using typical search engines such as Google.

The second layer is called the 'deep web' which includes specialized databases that do not come up in usual search engines, although users would typically know how to search for these services.

"The deep web can host servers for things such as [scientific papers](#) or medical records and are concealed behind passwords or other security walls," says Prof Jha, Director of CySpri Laboratory at UNSW.

The third layer is the 'dark web' – which is most commonly used for anonymity.

"The dark web was not originally created for criminal activities but

obviously some people have become entrepreneurial and decided to use it illegally for their own benefits," Prof Jha says.

"The technology behind the dark web is reasonably robust in terms of providing users with anonymity which is part of the reason why [criminal activity](#) on these networks is harder to track."

## Not your typical search engine

Forget what you know about Google or Yahoo, pages on the dark web won't show up in your normal search engines. It requires the user to download and install specialized Tor Browser servers so pages within the network can be discovered.

The Tor network is also generally slower than normal internet browsers because of the way it's designed.

"Like an onion, it uses multiple layers of encryption, which provides user anonymity," says Professor Jha.

When you are browsing using the Tor network, as you are moving from one Tor router to another, the network creates a secure 'tunnel.'

These tunnels use protocols specific to Tor and are built on top of the standard [internet](#) which make the source-destination pair difficult to track.

Professor Jha says this multi-[layer](#) encryption are like onion layers.

"The two communicating parties, a service user and a service provider, will not be able to find out about the identify of each other," he says.

"This set-up is the reason why it's so hard to detect activity in Tor."

## Don't be fooled by the name

Professor Jha says that while you may be considering the dark web for personal privacy reasons, you can very easily expose yourself to the threats of a cyberattack.

"For instance, you may download files that may look like the sort of files you may find in your regular browser but in actual fact they are packaged with harmful malware," says Prof Jha.

He also warns that not everything is anonymous on the [dark web](#), especially when you are providing your [personal details](#) to make purchases. Although most people commonly go through Tor for the benefits of anonymity, if not careful, these details can end up being used for the wrong reasons.

"If you are not careful and end up giving out your real personal details, you are exposing yourself to identity theft which can often end up being used for illegal activity," he says.

Provided by University of New South Wales

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