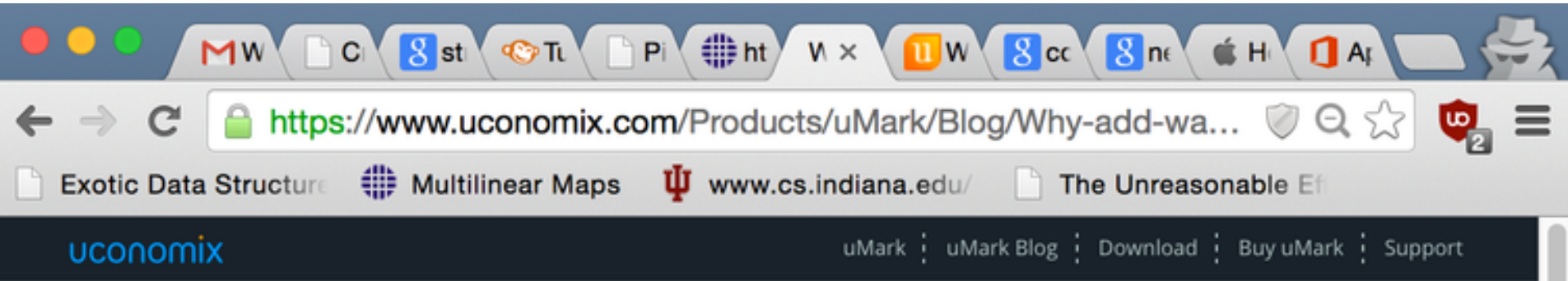




coffee
STAINS

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Classic Problem: Watermarking photos



uMark Blog

A blog about watermarking, photos and the art and business of photography.

[RSS Feed](#)

Basics

[What is a Watermark](#)

[Types of photo watermarks](#)

[Can a watermark on photo really prevent theft?](#)

[How to add watermarks to photos](#)

Tips

[The best possible text watermark combination](#)

[Tiling watermarks for better protection](#)

[Save time with saved watermarks](#)

Why add watermarks to photos? Can a watermark on photo really prevent theft?

Adding a watermark on the photo will not prevent people from stealing the photos. If your photo is on the Internet, people can save it! If people can see the photo in their browser that means the photo is already there on their computer and all they have to do is right click on the image and select Save as. If you disable right click, tech savvy thieves can still save your photo by disabling the JavaScript in the browser. If nothing works someone can just take a screenshot of the screen or take a picture with their mobile!

Long story short - if you photo is out there people can and will steal it! You can do nothing about it!



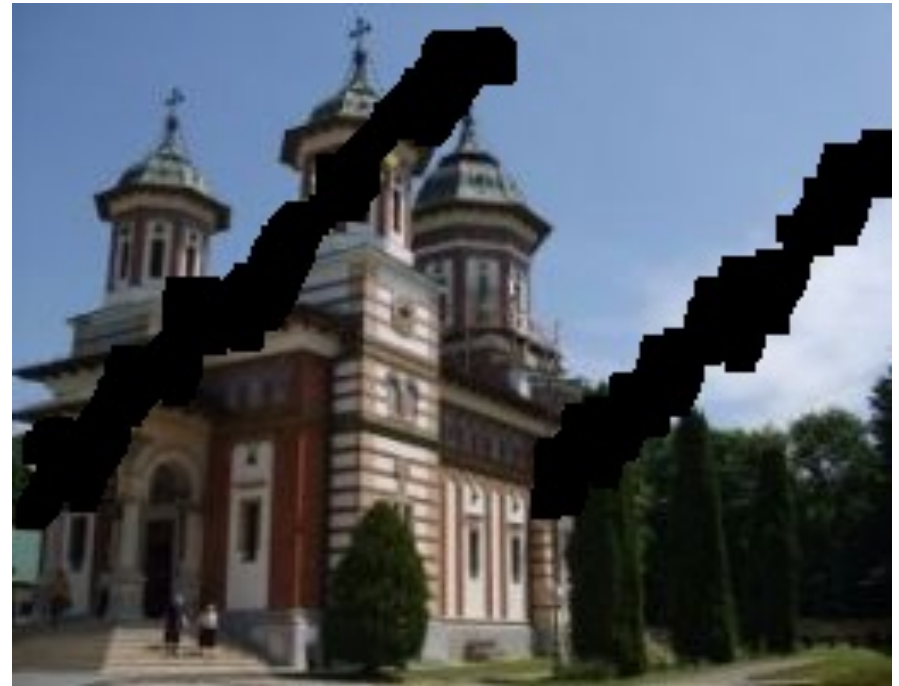
The extreme limits someone can go to copy your photo!

What you can - and must - do is to make it harder for the thieves to use your photo. And you do that by adding a watermark. A visible watermark that is so hard to remove, it's not worth the time!



Watermarking photos: SOLVED!

- “If you try to remove the watermark you end up damaging the aesthetics of the image cropping out most of it rendering the image useless.”



What about Circuits?

- Idea: Use coffee!



Coffee: Prior work

- Staining clothes



- Staining teeth



- Staining rugs



Coffee: Prior work

- Staining clothes Staining teeth Staining rugs



- Crypto-complete:
 - Renyi: “A ~~mathematician~~ *cryptographer* is a machine for turning coffee into theorems.”

What can we hope to stain?

- Can't stain simple [learnable] circuits:
 - Proof:



What can we hope to stain?

- Can't stain simple [learnable] circuits:


– Proof:



- What about complex [pseudorandom] ones?



Our Results

- **Theorem:** Can coffee-stain any *puncturable* PRF family (assuming IO)
- **Theorem:** Can even embed messages in the coffee-stain.
A series of overlapping, brown coffee stains arranged horizontally to form the word "coffee". The stains are of varying sizes and are slightly blurred, giving a sense of movement or a trail of coffee.
- **Theorem:** There exist *un-coffee-stainable* PRF families (assuming OWFs exist).



Thank
You

Sherifa