

Posudek oponenta bakalářské práce

Student: Barotová Štěpánka

Téma: Detektor kožních onemocnění u technologie otisků prstů (id 20057)

Oponent: Wayman James L., prof. Dr., SJSU

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| 1. Náročnost zadání
Considerably demanding assignment. | značně obtížné zadání |
| 2. Splnění požadavků zadání
Assignment fulfilled. | zadání splněno |
| 3. Rozsah technické zprávy
Exceeds requirements. | přesahuje obvyklé rozmezí |
| 4. Prezentační úroveň předložené práce
Excellent. | 100 b. (A) |
| 5. Formální úprava technické zprávy
- | 100 b. (A) |
| 6. Práce s literaturou
- | 100 b. (A) |
| 7. Realizační výstup
- | 100 b. (A) |
| 8. Využitelnost výsledků | |

This is the first paper I have seen on the subject of automatic detection of skin diseases from fingerprint data. I suspect that dermatologists will still diagnose diseases from photographs and physical inspection, and not rely on automated methods for diagnosis. Nonetheless, the understanding of how skin diseases impact analytic metrics that can be extracted from fingerprints is indeed interesting and can inform future fingerprint quality assessment algorithms.

9. Otázky k obhajobě

Page 5: "There are two types of biometric systems: a verification system or an identification

system [19]. The purpose of the former is to authenticate a person's identity by comparing their sample to the one that was captured previously. The latter recognizes a person by going through the whole database to find a match."

There may be other types of biometric systems. Which type of system is described here?

<http://www.bbc.com/news/world-asia-china-39324431>

The forensic science world is currently in turmoil over the question of "inversion of conditional probability". Let me give an example of an error of "inversion of conditional probability".

Because you are a student of Prof. M. Drahansky, the probability that you attend Brno Institute of Technology is 100%.

Therefore, because you attend Brno Institute of Technology, the probability that you are a student of Prof. M. Drahansky is 100%

The first statement (1) above is correct, but the second statement (2) is very incorrect. Most of the 24,000 people who attend Brno IT are not students of Prof. Drahansky (Perhaps 1 in 1,000= 0.1% are his students). Let's call "you attend Brno IT" the evidence. Let's call "you are a student of Prof. Drahansky" the hypothesis. We can say that the probability of the evidence is very high given the hypothesis, but the probability of the hypothesis given the evidence is very low.

Can you apply this concept to fingerprinting, using the hypothesis "these fingerprints come from the same person", and the evidence "the fingerprints are very similar"? This misunderstanding by forensic fingerprint examiners has caused identification mistakes to be made. A famous case in the U.S. is that of Brandon Mayfield - see <https://oig.justice.gov/special/s0601/final.pdf>

Prohlášení: Uděluji VUT v Brně souhlas ke zveřejnění tohoto posudku v listinné i elektronické formě.

V Brně dne: 5. června 2017

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podpis