

– Master-/Bachelor Thesis –

Sematic evaluation of LLM output for Biometrics

da/sec



da/sec is the biometrics and Internet security research group and is affiliated with University of Applied Sciences Darmstadt and the National Research Center for Applied Cybersecurity (ATHENE). The group is led by Prof. Dr. Christoph Busch. The focus of the group is on highly innovative and applied IT security research in the special fields of biometrics. Read more on www.dasec.h-da.de.

Motivation & Goal

Biometric systems—employed across services from banking to border control—automate identity verification and can cause significant harm when errors occur. Regulatory frameworks such as the EU AI Act therefore require explainable outputs to enable developers and users to identify biases and vulnerabilities. Leveraging large language models to convert face-image analysis and recognition results into human-readable explanations can bridge the communication gap between recognition systems and stakeholders; however, those explanations must be rigorously evaluated for accuracy and fairness. This project proposes systematic, reproducible evaluation methodologies to ensure explainable biometric systems remain compliant with regulations and deliver an improved user experience.

Tasks

- Get familiarized with state-of-the-art semantic algorithms (Semantic transformers, BLEU, ROUGE).
- Implement evaluations on LLMs performing face image analysis and recognition.
- Report and analyze the results.

Requirements

- High motivation and creativity.
- Programming experience.
- Good communication skills.

By Date

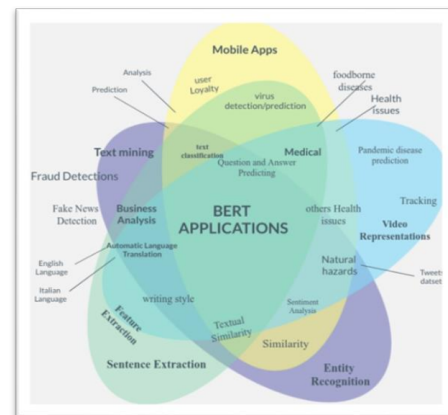
By now / by appointment

Contact

Ana Real

ana.estrada-real@h-da.de

PhD Candidate
Computer Science



ATHENE–National Research Center for Applied Cybersecurity

da/sec – biometrics and internet security research group

Hochschule Darmstadt

Schöfferstraße 10

64295 Darmstadt, Germany