

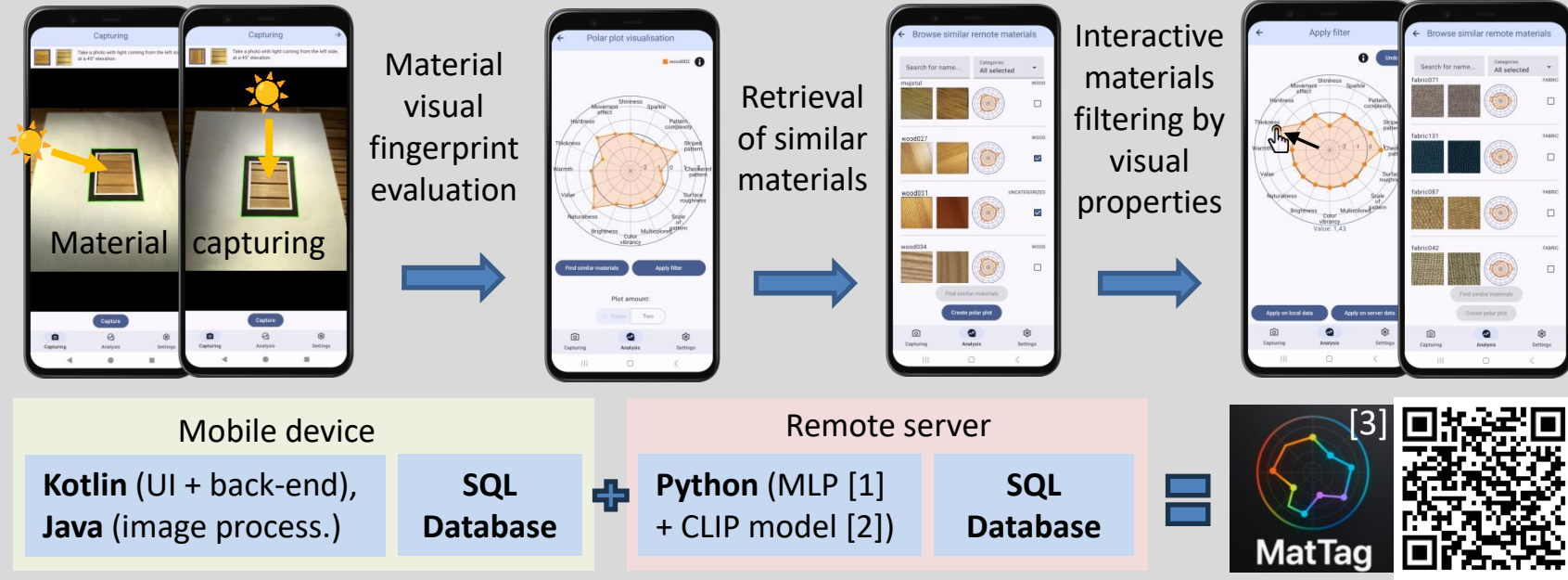
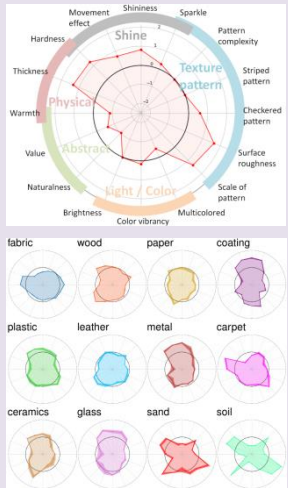
Mobile application for evaluation of material visual properties

Motivation

material collection
structuring and
organization



Material visual
fingerprints [1]:
16 attributes in
a polar plot:



Features

- **Android operating system** $\Rightarrow$ compatible with Android 12.0 or higher
- Mobile app developed in **Kotlin** and **Java** (camera control, user interaction, image processing)
- Requires functional camera and internet connection
- **Client-server architecture**: analysis on server-side using a Python backend
- Server codes are available & server address/port can be configured $\Rightarrow$ **creation of a proprietary database**
- Application allows **export of local measurements** (images + fingerprint values)
- All codes and releases are provided: <https://github.com/adamstas/material-fingerprint-app>

Application scenarios

- **Identifying the closest visual match** within a production portfolio to a customer's reference material
- **Interactively navigate material collections** by adjusting the importance of individual perceptual attributes
- Users within an institution can share a private **database of in-house materials**
- Fingerprint values can be exported and used as **material digital metadata**

1. Filip J., Děchtěrenko F., Schmidt F., Lukavský J., Vilímovská V., Kotera J., Fleming, R. W.: **Material Fingerprinting: Identifying and Predicting Perceptual Attributes of Material Appearance**, arXiv 2410.13615, October 2024
2. A. Radford, J. W. Kim, C. Hallacy, A. Ramesh, G. Goh, S. Agarwal, G. Sastry, A. Askell, P. Mishkin, J. Clark, et al., **Learning transferable visual models from natural language supervision**, International conference on machine learning, PMLR, 2021, pp. 8748–8763.
3. **Stas A., Pilar D., Filip J.**: **MatTag: Practical material tagging using visual fingerprints**, **MANER Conference Mainz/Darmstadt, August 29, 2025**