# Motion Capture & Material Measurements

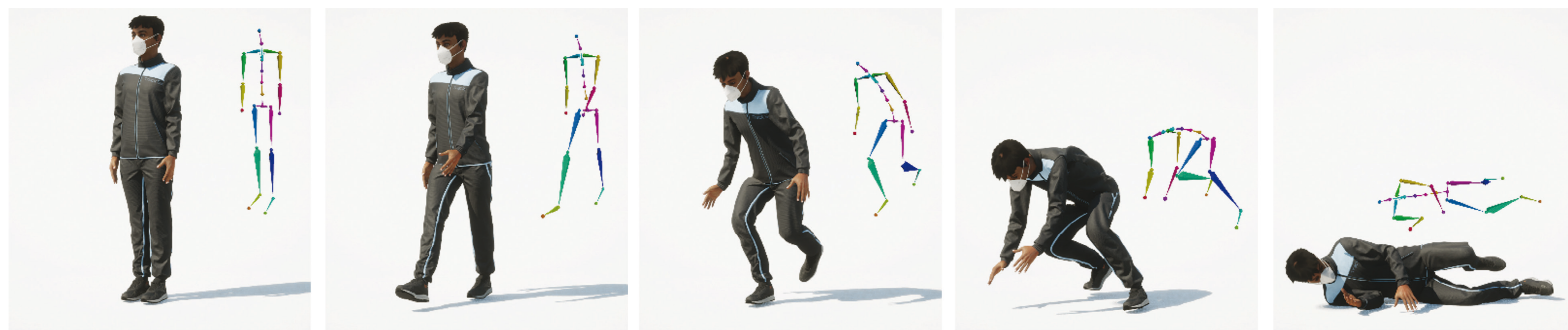Markus Bartnick[1], Markus Huber[1], Johannes Günther[2]

Synthetic data generation with high degree of **realism and accuracy** → **measurement** of key elements such as pedestrian motion and material characteristics



**Measurement Data**

## Motion Capture

- Markerless motion capture system based on inertia sensors
- Capturing interactions between persons and interaction with objects
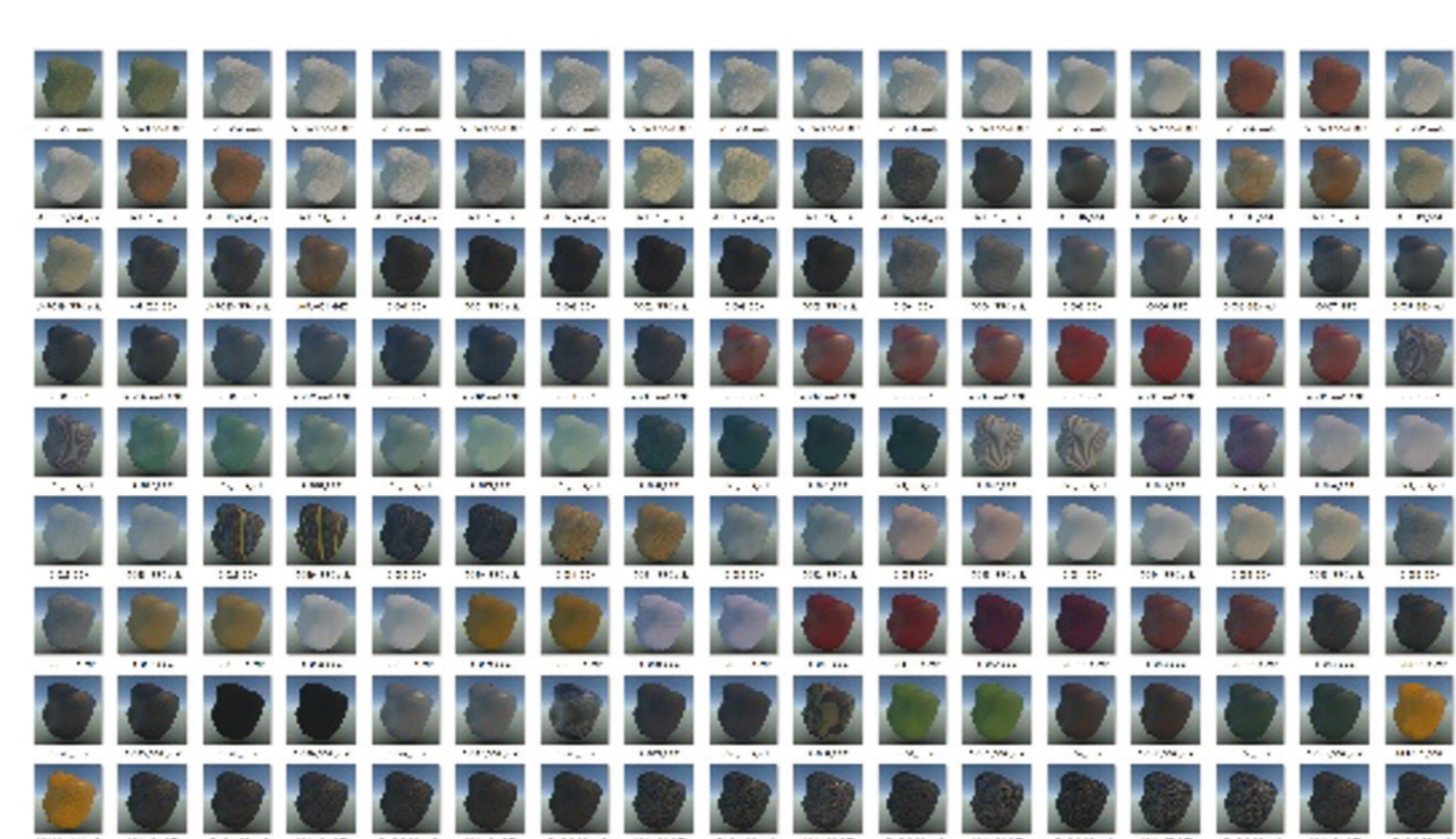- 3 different actors



1. Record skeletal motion data
2. Clean and process for usage with 3D character models
3. Transfer to the 3D models („retargeting")
4. Final pedestrian animations

## Material Measurement

Selection of relevant materials:

- Cloth
- Architectural materials such as plaster
- Infrastructural materials such as pavement



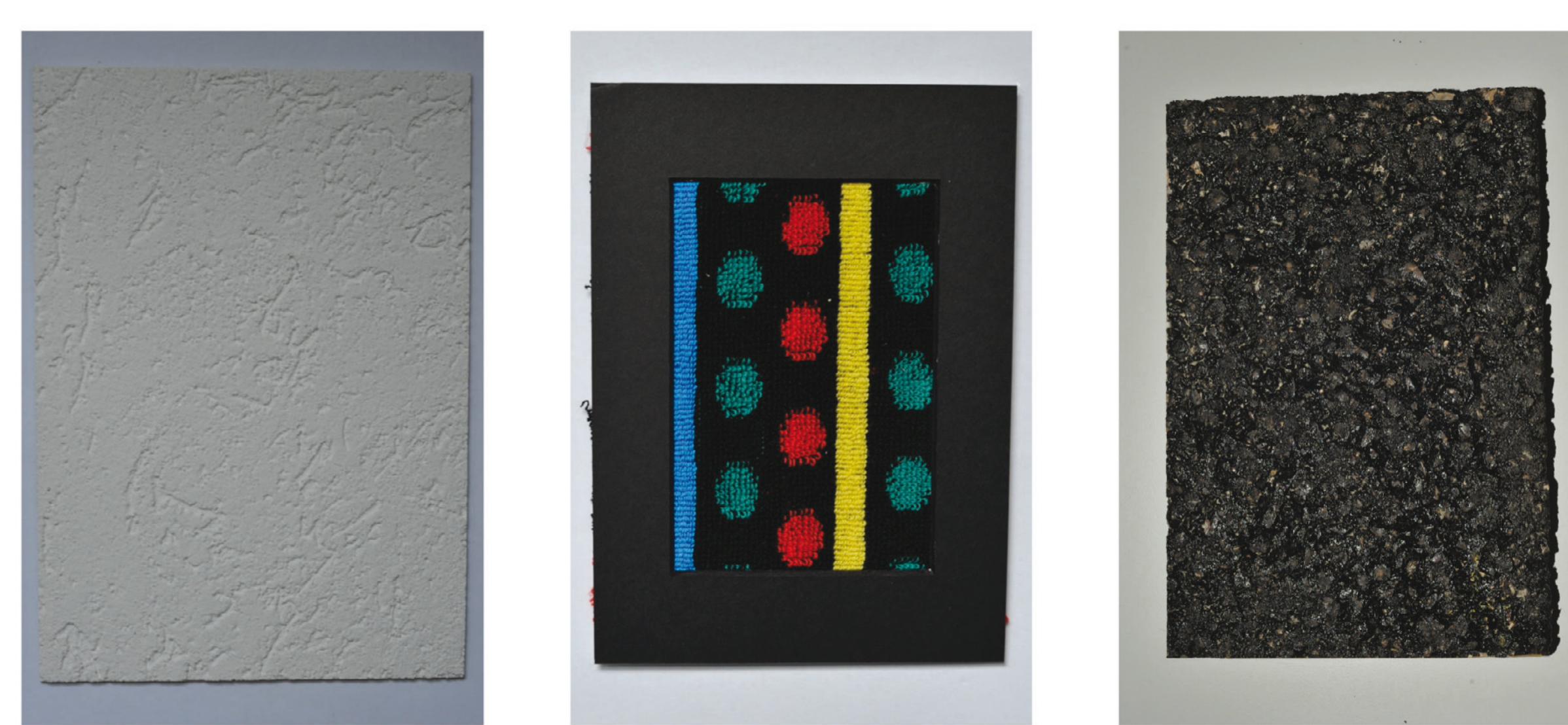80 materials
73 tileable

available as:

- **AxF** files for usage with the game engine based toolchain of Mackevision
- **glTF™** files for usage with the Intel OSPRay offline renderer within the BIT-TS toolchain

Total of 90 animations:

| # | Motion | Length |
|----|--------------------|--------|
| 1 | Walking person #1 | Loop |
| 2 | Running child | 11 s |
| 3 | 2 persons hugging | 9 s |
| ⋮ | ⋮ | ⋮ |
| 90 | Person on bicycle | Loop |

Interaction with objects: the animations were adapted such as non-captured hand/finger movements and the interacting objects are animated. The output has been generated which are ready-to-use animations of pedestrians including interactions.

physical material samples





**X-Rite TAC7 scanner**: highly accurate appearance in visible light spectrum

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Image sources: Fig 1&2: Mackevision; Fig. 3: Intel; Fig. 4: Intel, X-Rite, Mackevision