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| DATASET 1 (DS1) - **BIOMECHANICAL CHARACTERIZATION OF ELEFANT TRUNK** | |
| Tasks involved | T2.1, T2.2, T2.3, T3.1,T3.2, T3.3, T6.1 |
| Creator/Curator | UNIGE |
| Partners involved | IIT,SSSA |
| General description of the activities | Task 2.1 aims at performing Magnetic Resonance Imaging and Computed Tomography of the elephant trunk will be performed.  Task 2.2 aims at scaling up the the classical episcopic microscopy technique. Experiments will be performed by treating separately the tip and the rest of the trunk. The elastic properties of muscles, skin and connective tissues will be inferred by micro-indentation.  Task 2.3 aims at developing a biomechanical model of the skin. The mechanical behaviour of the elephant skin will be modelled for different regions of the trunk and tip (with commercial or our own software).  Task 3.1 aims at defining experimental protocols and setup for different grasping and manipulation strategies (delicate vs strong, granular and material in water, etc.). The experimental setup will be built, with a marker-less motion capture system and forcesensorized objects having different size, weight and shape.  Task 3.2 aims at performing experiments with animals and analyzing the data. according to protocols defined in T3.1.  Task 3.3 aims at developing a kinematic modelling of the trunk through stereotyped movements (trajectories to accomplish reaching, etc.).  Task 6.1 aims at investigating 2D and 3D multimodal sensing technology through the use of transducer mechanisms that can be used for distributed, multimodal sensing (pressure, strain, shear, vibration etc.) in a 2D skin and in 3D tip ‘fingers’. Powering, signal conditioning and data transmission electronics (wireless) for distributed sensors at medium and large scale are addressed here.  DS1 aims at collecting all the models (simulation, CAD) and experimental data generated during these activities. |
| References | 1. Elephants evolved strategies reducing the biomechanical complexity of their trunk (2021) **Current Biology**, Paule Dagenais, Sean Hensman, Valérie Haechler, Michel C. Milinkovitch (<https://zenodo.org/records/11066884>) |
| **DS1’s folders and contents** | * ***PROBOSCISDS1\_sub1***   *[To provide a high resolution 3D morphological and anatomical reconstruction of the trunk of the African elephant (Loxodonta africana), including details on skin, muscles, nerves and connective tissues, UNIGE, IIT, SSSA) and their datasets]*   * [high resolution 3D morphological and anatomical reconstruction of the trunk of the African elephant (Loxodonta africana)] – dedicated webpage: <https://www.lanevol.org/projects/proboscis> * ***PROBOSCISDS1\_sub2***   *[To provide a virtual model of the behaviour of African elephant trunk, UNIGE, IIT, SSSA) and their datasets]*   * + Link to the paper [1], uploaded at <https://zenodo.org/records/11066884> DOI: <https://doi.org/10.1016/j.cub.2021.08.029> |