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Virtual and integrative approaches to increase student and visitor biological knowledge using the Hong Kong Biodiversity Museum specimen collection

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Abstract:

Although tropical and subtropical regions are critical areas for worldwide biodiversity, Hong Kong has no major natural history museums or collections to instruct students and the public in diverse animal anatomy, the importance of biodiversity, and in local species and their conservation. Additionally, the increase in the exotic pet trade requires students in CityU's newly-accredited veterinary program to be knowledgeable regarding a wider range of animals beyond classical domestic pets. The resources available, however, for exposing students to animal diversity are surprisingly rare in Hong Kong and in CityU's anatomy collection, hampering our students in training opportunities in the biological and anatomical sciences. In this collaborative project, capitalizing on a Virtual Teaching and Learning (VTL) approach, we propose to develop a 'Digital Zoo', presenting a gallery of animal diversity using specimens from the HKU's Hong Kong Biodiversity Museum. Specimens from the collection will be rendered using diverse modern 3D tools (surface scanning, photogrammetry, CT scanning and 3D-printing) and housed in a virtual 'metaverse' museum, allowing students (e.g. in CityU's VM3012 anatomy course) the chance to virtually interact freely with diverse and even rare specimens, to deepen and integrate their anatomy knowledge and provide them with a distinctly broad career preparation. This unique resource will be accessible both online and on-site (using VR headsets) for CityU and HKU students and the general public, enhancing interactive and comparative anatomy knowledge for veterinary and biology students at both institutions. The project will therefore greatly expand CityU's anatomical museum (without demanding additional local storage space), create a cutting-edge outreach and pedagogical tool to showcase our newly-accredited veterinary medicine program, and build novel bridges between CityU and HKU for both teaching and research collaboration.