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Creating exact 3D models for scientific research

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We involved with 'Research on the recognition of 3D objects by visually handicapped persons and development of 3D geometrical teaching materials' project in Japan (FY2006 - FY2009). One of our main aims is to develop teaching materials to enrich the world of observation of blind people by touch. We have been creating models that blind people have never touched. The models have innumerable topics, but can be divided into two categories. The first includes models with objects that we cannot actually touch because of their size-gigantic or microscopic objects. As concrete examples, we are developing models of the planets in the solar system (Earth, Mars, Venus, and Moon). Enlarged models of microorganisms like radiolarian and foraminifera are also examples of such models. The second category consists of models with abstract objects. We created models related to mathematics. Models include ring torus, horn torus, spindle torus, hula-hoop surface, Bohemian dome, Klein bottle, regular polyhedra, semi-regular polyhedra and crystallographic structures. Touchable models are significant for not only visually impaired people but also sighted people. The models are useful for systematic and intuitive learning of mathematics and sciences.

Keywords: 3D models