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Abstract
To promote the amusement of engaging in windsurfing sport, a set of windsurfing arcade game is developed and provided for players who in real life may be or may be not good at playing the windsurf sport with dynamic levels of challenges to enjoy windsurfing in cyberspace. Based on a hybrid wave model and the specified methodology, the effect of vivid three-dimensional wave/water visualization/rendering in real-time is realized in implementing the three-dimensional arcade game system “Oceanaut” with a three-degree-of-freedom servo platform and a force feedback joystick for player operations, e.g., ‘Heave’, ‘Sway’, ‘Surge’, ‘Yaw’, ‘Roll’, and ‘Pitch’, in windsurfing sport. In this thesis, a real-time and heterogeneous amusement synchronization mechanism is proposed and implemented in the windsurfing sport arcade game with a force feedback joystick. Playing the windsurfing arcade game with the amusement synchronization mechanism, the players can physically receive the force feedback from the arcade game system and experience a vivid oceanic three-dimensional game environment.
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