An Interactive System for Real-time Wavefront-based Water Waves Simulation

by

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The work of this thesis aims to bring a state of the art research by S. Jeschke and C. Wojtan [Jeschke and Wojtan(2015)], for water waves simulation through wavefront propagation into the real time domain. The original work stands out for two major qualities: Firstly, a very accurate height calculation scheme is used for each rendered point of the surface. Additionally, their system is the first to unify the 4 desired wave behaviours, which enables rich environmental interactions. Our work consists of three parts. Firstly, we manage to perform the simulation and the rendering simultaneously by substituting the original interpolation scheme with a heuristic propagation model. This novelty allows us to propose some methods for enabling interactions between dynamic bodies and the water surface, which is our secondary contribution. Lastly, we perform a technical evaluation on the implementation with the hopes of providing a better understanding of both the technical and design limitations of such a system and we provide our insights for the direction of the future work.