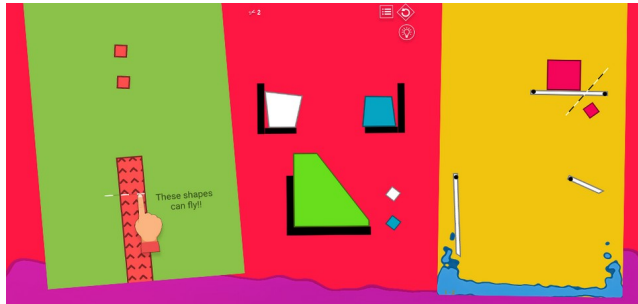
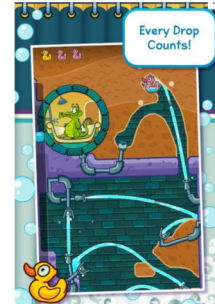


Physics-based Game: Fluids

This project aims for a simple playable game utilizing a fluid simulation module. This requires essential programming/software engineering skills for developing an application, good understanding of numerical simulations for fluids, and creative thinking to design game contents.



[Src: discuss.cocos2d-x.org/t/shape-slice-cocos2dx-liquidfun/]



[Src: igamemom.com/where-is-my-water]

Objectives

The first step is to understand the fundamental knowledge of physics-based fluid simulation such as SPH [1]. You can aim for a 2D game involving fluid simulations as a key factor of game play. You can implement your own minimal simulator or utilize any open-source software such as PhysX¹. You can aim for any types of game. In summary, this topic expects a playable game application including the following requirements:

- Game design that works under the physics-based fluid simulation context
- Application codes written in C/C++ utilizing an in-house or open-source physics engine

You are strongly encouraged to use your creativity.

Topic difficulty: easy | intermediate | **advanced**

Prerequisites

- Good programming skill in C/C++ for implementing new codes and utilizing existing codes
- Knowledge of physic-based modeling as well as numerical simulation
- Experience of 3D computer graphics programming

Reference

- [1] 2022, Koschier et al., A Survey on SPH Methods in Computer Graphics, Computer Graphics Forum.

Supervisor: [Kiwon Um \(kiwon.um@telecom-paris.fr\)](mailto:kiwon.um@telecom-paris.fr), Assistant Professor, Telecom Paris

¹ <https://nvidia-omniverse.github.io/PhysX/physx/5.1.3/index.html>