Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

(This form should be completed and submitted on or before 3.00 PM, Wednesday 30th December, 2015)

The purpose of this form is to allow final year students of the B.Sc. (Hon) degree program to enlist in the final year project group. Enlisting in a project entails specifying the project title and the details of four members in the group, the internal supervisor (compulsory), external supervisor (may be from the industry) and indicating a brief description of the project. The description of the project entered on this form will not be considered as the formal project proposal. It should however indicate the scope of the project and provide the main potential outcome.

PROJECT TITLE	Soft Body Dynamics

RESEARCH GROUP	CDAP - 78

PROJECT NUMBER		(will be assigned by the lecture in charge)

PROJECT GROUP MEMBER DETAILS: (Please start with group leader's details)

	STUDENT NAME	STUDENT NO.	CONTACT NO.	EMAIL ADDRESS
1	M.Y Alimudeen (GROUP LEADER)	IT 13 0013 08	0775087168	yazdaan.alimudeen@gmail.com
2	E.M.D.C.M Ekanayake	IT 13 1079 56	0717964161	malruvin.dcm@gmail.com
3	S.M.D.R Kithsiri	IT 13 0862 44	0789688425	kithsiri3052@gmail.com
4	W.M.G.N.P Kumara	IT 13 1195 22	0771556585	geethika.nuwan1@gmail.com

SUPERVISOR

Name	Signature	Date

CO-SUPERVISOR (will be assigned by the Supervisor, if necessary)

Name	Signature	Date
Darshana Kasthurirathne		

EXTERNAL SUPERVISOR (if any, may be from the industry)

Name	Affiliation	Contact Address	Contact Numbers	Signature/Date

ACCEPTANCE BY CDAP MEMBER

Name	Signature	Date

PROJECT DETAILS

Brief Description of your Research Problem:

Modern video games have become increasingly detailed and expansive. These games utilize complicated and intricate 3D meshes to simulate reality.

Making immersive games isn't an easy task though, and game engines don't provide features for soft body physics. Soft body physics involves dynamic changes in meshes in response to an object's environment. These changes can include squashing, stretching and plastic deformation.
 Existing solutions for implementing soft body physics are expensive and/or are closed source. One major reason this area hasn't been pursued heavily is the incredibly high computational power that handling dynamic meshes, requires. This hurdle has become less of a problem now that processing capability has caught up.

Description of the Solution:

A video game plugin that developers will easily be able to add to their game that converts their static objects to dynamic ones, responding to external forces and change accordingly.

This module will be customizable (for the developer, thereby allowing them to expose the customisations to the end-user) so they can decide the physical properties of the objects like elasticity.

The component will be distributed via the game engine's marketplace/asset store.

Main expected outcomes of the project:

At the end of this project, we will have a thorough knowledge in areas such as computational geometry and soft body dynamics.

Developers will be able to use this plug-in in their games, increasing the mechanical variety in video games.

Open sourcing this project will allow developers to extend the development into areas this plug-in couldn't touch using this project as a base.

WORKLOAD ALLOCATION (Please provide a brief description about the workload allocation)

MEMBER 1 | **Plastic mesh deformation**

When a collision has been detected on a mesh, the plug-in should deform the mesh appropriately keeping the object permanently deformed.

MEMBER 2 | **Fluid dynamics**

The simple simulation of either particle or meshed based fluids. The plug-in will consider buoyancy, surface tension, viscosity and so on.

MEMBER 3 | **Destructible objects**

Create fractured meshes from the original meshes, and replace them when destruction parameters have been met.

MEMBER 4 | **Collision detection**

Detection of objects that are prone to collisions using broad phase and narrow phase algorithms.

DECLARATION

"We declare that the project would involve material prepared by the Group members and that it would not fully or partially incorporate any material prepared by other persons for a fee or free of charge or that it would include material previously submitted by a candidate for a Degree or Diploma in any other University or Institute of Higher Learning and that, to the best of our knowledge and belief, it would not incorporate any material previously published or written by another person in relation to another project except with prior written approval from the supervisor and/or the coordinator of such project and that such unauthorized reproductions will construe offences punishable under the SLIIT Regulations.

We are aware, that if we are found guilty for the above mentioned offences or any project related plagiarism, the SLIIT has right to suspend the project at any time and or to suspend us from the examination and or from the Institution for minimum period of one year".

	STUDENT NAME	STUDENT NO.	SIGNATURE
1	M.Y Alimudeen (GROUP LEADER)	IT 13 0013 08	
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