Research Statement

When I was in school I saw a show on Discovery Channel by Dr. Michio Kaku, one of the leading physicists on String Theory, about finding a theory of Physics so powerful which will describe all the working of the universe. Einstein stated the idea and he spends his last two decades trying to find it and it still remains a mystery. Well I am not trying to find anything like that but since then the idea of unification has always influenced me.

In my undergrad days I worked on algorithms and games. I didn't understood how the idea of unification can be applied to problems related to computers until I started making games for multiple platforms. I needed to run my game on all system without changing the code but I was only confined to Windows platforms (Windows PC, Windows Phone and XBox) and there was no way out. It was never easy for the developers to develop a game or app which can run on all platforms or system. I then realized a 'unified' solution was required to solve the problem. One of the good solutions particularly for games is cloud gamming, the concept is to simulate the game on cloud and send the video output to devices but the only barrier in the technique is the latency. There are other scenarios which too needs unified solutions and such problems gets me excited.

Unification is the Key to my work.

Currently I am doing a project on social networking with Dr. Goutam Paul, which reflects my vision of unification. I find that the information and data a user shares over social networks and web services is somewhat 'fragmented'. Such fragmentation occurs when a user uses multiple web services to share basic data like photos, videos, posts, etc. and this has become a common phenomenon. The idea of the project is to bring together these fragmented data and information by integrating most of the popular web services and create a unique experience. The user data can be categorized into Photos, Videos, Music, Notes/Blog, Social and Profile. Each section will be integrating its respective popular services like for Photos will be integrated with Flickr and Picasa, Videos will include YouTube and Vimeo and others respectively. The user will be able to control the data of different web services through a single service which will help them better organize the data and probably increase the user privacy control over shared data. A part of the project explaining the inconsistency of sharing in Social Networking Sites has led to a research paper.

Besides this I am also mentoring a Team of two students for Imagine Cup 2013 in Game Competition Category. The team is making a game based on my 4 day prototype game *Squares Vs Triangles*. The original prototype was top-down

platformer style and was inspired form Jon Klassen's art *ShapeWarsWeb2.jpg* and *SquaresAndTrianglesAtSea.jpg*. The genre of the prototype was quite experimental and unique it fused the tower defense mechanism with real time simulation (RTS) genre, which made it win first place in OpenSoft Kshitij 2011 (*IIT Kharagpur Techfest*). But this time the gameplay is changed to simple platformer with additional features like multiplayer (4v4), more classes of weapons and new objectives. My role in the team is to manage the teams' work schedule and monitor the creative aspects of the game like the character, weapons, story and gameplay features.

Previously I have done research on Educational Games for children. It was interesting to see how children learn faster through games. I developed two games as a part of the research Gombli and Atooms to Moolecules. Gombli is a simple side-scrolling platformer game, where Gombli is a little girl who uses different power-ups to fight pollutants and save endangered species. The game teaches the player about pollutants and how to remove them from atmosphere. The model of the game is published as a poster En*vironment Educational Game Design*. Atooms to Moolecules is a puzzle based chemistry game where the player can make molecule by joining atoms of same or different kind. The game has different levels with varying difficulty; some of them suggest the player to make molecules faster whereas in other player have to make specified molecules. The design of the game is published as *Learning Chemistry through Puzzle Based Game: Atoms to Molecule*. The game won many technology exhibitions, techfests and Intel Level Up 2011 in Educational Category.

My research goal is to provide unified solution to the weird and unique problems. My primary research interests are Social Computing, Enabling Technologies and Learning Sciences and Technologies; and its respective ongoing Human-Centered Computing (HCC) projects that I would like to work on are Connectivity Lab (*Leysia Palen*), Sikuli Script (*Tom Yeh*) and Scalable Game Design Initiative (*Alexander Repenning*). It would be a great opportunity to be a part of HCC PhD. program, which is known as one of the best HCI School. I believe that this institute will help me hone my research skills perfectly and grow me to become a significant contributor in this field.

Resume: *http://sdrv.ms/PK0O5k*
Portfolio: *http://sdrv.ms/RJkaKX*
Blog: *http://suvozit.blogspot.com*