Aryabrata Basu

Teaching Statement

*"It is only through failure and through experiment that we
learn and grow." - Issac Stern*

Origins

The year was 2001-02, and I was drawn to the brand new Physics textbook my Junior year at High School. I was very keen on learning the principles of thermodynamics. As a physics enthusiast, I had all the vigor to learn new content but lacked the rigor to follow up on unclear concepts. At the time, I recoursed to my Applied Physicist uncle Debabrata, who told me to forget the textbook for a moment and told me to observe the Airconditioner as an example. He then started explaining thermodynamics' principles in a very relatable way, methodically building upon ordinary everyday machines operating around us. Quite inspired by this incident, I then went on to teach 'Special Theory of Relativity' to Sophomores at my High School on Teacher's day, for which I got awarded the best teacher for that year. These incidents sparked a lifelong appreciation for more accessible pedagogical techniques and methodologies.

Teaching Experience

I got the chance to teach on a serious note when I joined the University of Georgia's Graduate School in the Fall of 2009 and was awarded the chance of TA'ing the following courses: 1. Introduction to Computing (CS 1100), and 2. Intermediate Java Programming (CS 1302A). I cherished both the courses, but I developed a certain affinity towards teaching the Introduction to Computing (CS 1100) course. After that, I took a long break from teaching until my stint at Emory University as a Lead Instructor to teach *Introduction to 3D Visualization, and Interactive Media Design* (ARTHIST 393R) began in 2019.

My current teaching responsibilities at Emory University involve introducing 3D modeling, texturing, and interactive visualization using real-time game engines such as Unity. For the first half of this course, we go through hands-on assignments to learn and practice developing/modifying 3D assets. We focus on real-time rendering game engines and their various applications for the second half of the course. We learn (see demos) about various 3D visualization paradigms such as Virtual Reality (VR) and Augmented Reality (AR). Furthermore, this course introduces the concepts of basic interactive programming via scripting using the C-Sharp programming language. We implement basic 3D asset manipulation using the scripting language mentioned above. Finally, we learn about various application (immersive) deployment strategies that real-time game engines offer. The final deliverable for this course shapes up to be an independently completed immersive experience using animation, interactivity, or both revolving around a student's area of interest,

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Digital Portfolio   *1/2*

which ultimately can be deployed to the web. This course also instills best practices of the trade at every level possible and encourages the students to learn about accessibility, sustainability, and the open-access/open-source philosophy of software engineering.

Teaching Philosophy

After my little experience teaching in Graduate School, I wanted to contribute significantly by teaching students in the emerging field of 3D visualization paradigms such as Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). My renewed approach is to cast a wider net to attract students from all domains rather than just students from one department. This led me to create a thriving cohort of 3D visualization enthusiasts here at Emory, participating actively in the development of VR, AR, MR (jointly known as Extended Reality (XR)) based visualization projects in departments ranging from Art History to the School of Medicine.

My general rule of thumb regarding grading is to grade the student's honest intentions and subsequent actions taken towards the final project. I typically like incrementally building my course to trace back each student's progress throughout the course accurately.

Remote Teaching

A special mention regarding the COVID-19 induced adjustments to remote teaching: since the pandemic started, I have successfully transitioned a full load of 20 students from operating in a lab-based environment to a totally online environment by incorporating both synchronous and asynchronous broadcast of all of my lecture content through the Unity game engine interface.

Closing Statement

In the future, I foresee myself teaching regular topics in Computer Sciences (CS) but also special topics at the convergence of Artificial Intelligence, Robotics, and Advanced 3D Visualization along with Usability Analysis. I look forward to teaching bright and eager young minds now and then.