Raytracing Renaissance: ***An elegant framework for modeling light at Multiple Scales***

Ray tracing remains of interest to Computer Graphics community with its elegant framing of how light interacts with objects, being able to easily support multiple light sources, and simple framework of merging synthetic and real cameras. Recent trends to provide implementations at the chip-level means raytracing's constant quest of realism would propel its usage in real-time applications. AR/VR, Animations, 3DGames Industry, 3D-large scale simulations, and future social computing platforms are just a few examples of possible major impact. Raytracing is also appealing to HCI community because raytracing extends well along the 3D-space and time, seamlessly blending both synthetic and real cameras at multiple scales to support storytelling. This presentation will include a few milestones from my work such as the Slicing Extent technique and Directed Safe Zones. Our recent applications of applying machine learning techniques creating novel synthetic views, which could also provide a future doorway to handle dynamic scenes with more compute power as needed, will also be presented. It is once again renaissance for ray tracing which for last 50+ years has remained the most elegant technique for modeling light phenomena in virtual worlds at whatever scale compute power could support.

Sudhanshu Kumar Semwal joined the University of Colorado at Colorado Springs (UCCS) in 1987 and is the Director of the UCCS Honors Program since 2016. He has published more than 130 refereed technical papers in the areas of graphics, VR, Wearable Computing, visualization, and human animation. He is a tenured professor in the Department of Computer Science and served as Department Chair (2002). In 2007, he started the MS Computer Science program in Media Convergence, Games and Media Integration (The GMI) Program, the GMI Lab. A visiting summer researcher at the Advanced Telecommunication Research (ATR), Kyoto in 97-99, 2002-03, and Central Research Laboratory (CRL), Matsushita (Panasonic) Osaka (1991-92); also worked as a scientist at the Sandia National Laboratory, Albuquerque, NM, during 1995. His work has been presented in conferences at US, Singapore, Japan, Belgium, Czech Republic, Mexico, and Canada.