2018 Teaching and Learning Collaboratory (TLC) Seed Proposal Winners

Immersive experiments in the engineering classroom using Augmented Reality applications
Ravishankar Sundaraman, Chaitanya Ullal, Yunfeng Shi, Daniel Lewis (MSE)

- Combine augmented reality (AR) with real-time materials simulation to facilitate immersive in-class virtual experiments
- ENGR 1600 as an initial platform: develop five AR apps that address concepts that are most challenging to visualize
- Bridge AR apps with 3D printing to generate on-demand physical models eg. crystal structures that pair with AR content
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DATA@Rensselaer
(J. Kuruzovich and D. Lewis)

Increasing computational literacy and teaching data dexterity across the curriculum for students through curated instructor modules and computational infrastructure support.

Revolutionizing civil and environmental engineers’ introduction to the design process through immersive closed loop analysis, prototyping, and testing
Mohammed Alnagar, Victoria Bennett, & Omar El-Shafee

This project plans to implement a Civil and Environmental Engineering (CE/EE) ID that fosters the development of engineering judgment through state-of-the-art modeling tools in a collaborative and engaging environment, and by allowing students to build, test, and fail prototype designs, and learn from their failures.

Towards this goal, the following objectives are proposed:
- Implementing a novel course module.
- Implementing 3D modeling software models with multiple variations.
- 3D printing and testing of the selected prototypes.
- Video recording of the whole process to create tutorials on how to use all the involved technologies.

On-Line Mentoring for STEM Students (First Year and Beyond)
Gerald Korenowski (Chemistry) Alex Ma (Chemistry) Bruce Piper (Math) Peter Persans (Physics)

- Two-hour on-line mentoring sessions for Calculus 1, Chemistry 1, and Physics 1 open to all students enrolled in those classes.
- Weekly sessions are conducted by specially trained peer/mentors. Each content area is held in a separate two-hour block.
- Each session will consist of content related material and student success topics such as study skills, time management, coping with stress, etc...

- Video conferencing tool such as Adobe Connect is used along with smart board technology in order to conduct real time, interactive on-line mentoring sessions.
- Students can submit questions in real-time either via typed messages in the chat room or through audio connection. Their anonymity can be maintained if they wish to do so.
- The mentoring sessions are accessed by the students from any location on or off campus using an internet connection.
- All the sessions are recorded and archived so the students have them available for future reference.