Poster: NSF DGE#1723250, "Captivology-Stimuli-based Learning (CAPITAL) of Big Data Security (BigSec): Towards a Science/Engineering, Career-Oriented Training"

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The goal of this project is to implement a new pedagogy, called <u>Captivology-Stimuli-based Learning</u> (CAPITAL), for the active training of big data security/privacy knowledge, through the development/offer of two courses (one for undergraduate, and one for graduate students) together with their flipped classroom and virtual reality (VR) materials (such as lecture videos, VR-based cybersecurity games, etc.), for the students in both electrical & computer engineering (ECE) and computer science (CS).

30-min video clips Classroom group-based discussions Flipped Feeling-of-freshness classroom Pre-class quizzes In-class short programming exercises (FoF) stimuli VR-based Fully immersive BigSec games 3-D interactive animations learning Multi-disciplinary senior proj Campus showcase Capstone showcase Sense-of-accomplishment Rewarding policy Team-based proj competitions **Design competitions** (SoA) stimuli Graduate stu. research proj. Patent filing Patent-targeted proj.

Research kills enhancement via graduate student BigSec course:

New pedagogy: CAPITAL model:



Assessment tools used:

1	Quantitative data: BigSec courses' grades	8	Exit interview with some last-year students
2	Two courses' student surveys	9	Student learning journal during project design
3	Course instructor questionnaire	0	Graduate advisor comments on BigSec topics
4	Virtual reality games survey	1	Focus groups on flipped classroom students
6	Student project competition results	Ð	School IP (Intellectual Property) office data