

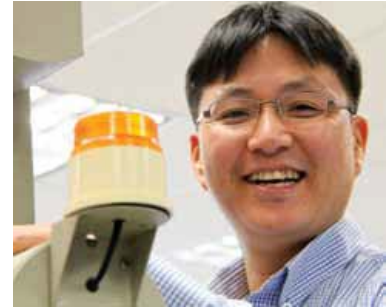
# Virtual Reality and Model Citizens

***Young Jun Son is simulating how we think and act during crises so we can survive them***

Professor Young Jun Son of the systems and industrial engineering department is simulating human decision-making and social behavior to determine how people, as crowds or individuals, act and react in various scenarios, from evacuating a burning factory, to shopping at a mall, to fleeing in panic from a terrorist attack. His research is funded by AFOSR, NIST and DOT-FHWA.

Son's group has developed a belief-desire-intention framework that integrates behavioral models from engineering, psychology and economics. The framework derives its realism by reverse-engineering actual human behavior in experiments conducted in virtual reality environments, including evacuation behavior during a terrorist bomb attack, pedestrian behavior in a factory fire, and error detection and resolution in a complex manufacturing facility.

The human behavior observed during a simulated bomb attack allows law enforcement and homeland security personnel to conduct what-if analyses of evacuation management decisions, such as where to deploy troops or officers and whether to guide or restrict crowd movement, and to determine evacuation times and potential casualties. Son's simulator also follows factory designers to conduct what-if analyses that optimize factory layouts for productivity, safety and security.



**Professor Son is director of the Advanced Integration of Manufacturing Systems and Technologies Center**