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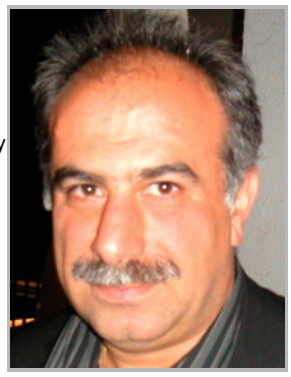
ArmorWay: Applying Computer Game Theory To Real Life Problems

Story by Benjamin F. Kuo

Despite the widespread impact of software today on our lives, there are a number of areas of computer science research which have had a difficult time in being translated into practical, every day usage. One of those areas is game theory--the use of computer simulations to predict the behavior of multiple people or entities, and how they will behave together, most famously depicted in that 1980's movie, War Games. Los Angeles startup--**ArmorWay** (www.armorwaycom)--is trying to take what has mostly been an esoteric computer science research area, and is now looking to make it applicable in real life. **Zare' Baghdasarian** is the CEO of ArmorWay, and told us a bit about the company and its software and how it is applying it to real life, physical security.

Tell us what ArmorWay's software is all about, and what it's used for?



Zare' Baghdasarian: Our software uses for security applications and security planning, and it uses game theory, analyzing big data collected on security environments, providing visual and predictive analysis. What we bring to the table is competitive analytics, where we consider your security adversary, and figure how they are trying to break your system, under different scenarios, and recommend a plan which optimizes your security strategy. The key is to make it so your actions are not predictable, which is the best strategy. We convert that data and visualizations to action items, with the adversary in mind.

Where did the technology come from?

Zare' Baghdasarian: This technology was funded by the Department of Homeland Security, the Army Research Lab, and the Department of Defense. It was started at the University of Southern California in 2006-2007. The product is now being deployed, and has been used and validated by the US Air Marshal Service, the US Coast Guard, and the LA airport police. It was formed by myself and my co-founders, after we did the research, to take that research and product and make it commercial software, and extend it to other domains for everyone. We're now scaling it up, and we've also filed seven patents in that process. We have a well cooked engine and processor, and we are now trying to put applications into the real world.

What's drove your decision to take this to market as a stand alone company?

Zare' Baghdasarian: There was a b ig need in the domain. If you look at the seurity domain, there is a lot of security being collected for security problems. What we are bringing to the table, is takcomplex data, and solving big, complex problems in real time. That's a huge value to people who do security planning, whether that is physical or cyber security, everywhere. We take it to the next level, from visualization of data to the actions, the things that help overcome adversaries. Part of the reason we also turned this into a company, is because the real use by the U.S. Coast Guard. They needed to expand the use of our product to all of their ports, and to do that, it needed to be a commercial product—not research. Once we had validated the product, and to get it into real life use, it had to be commercially available. Our current customers and users had a very high desire to make it available, and so we developed the company to deliver the product.

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Game theory is a pretty esoteric computer science area – how do you make that applicable in real life, and usable at a practical level?

Zare' Baghdasarian: That's the precise issue we address with our patents. Game theory has been around for a long time, but when you apply it to complex problems, that math and modeling gets very complex, you need a supercomputer. You can't do it in real time. That's what the patents and research at USC were all about, about applied Game Theory, being able to solve complex problems in a very effective and timely manner. That's where our niche is. We take a very complex model, which uses game theory, and solves that problem very quickly to find a real solution. Before that, you had to use really big computers to do this. For example, there are 30,000 to 40,000 flights a day in the United States. If you imagine trying to model how many air marshals you need to cover those flights, it's a huge problem. Solving that equation is ten to the power of 41 equations. You cannot do that, unless you use unique techniques. That's what we've brought to market, using computation of game theory on security every day. There's no such thing as 100 percent security. You're trying to defend a territory from someone trying to break in, and that someone is watching all of your actions, and trying to get into the game. If you can make your plans unpredictable, then it's much harder for someone to break in. It's like a chess game, where you are staying steps ahead of them.

What kind of adoption do you have on this so far?

Zare' Baghdasarian: It's getting used at LAX every day, by the US Air Marshals every day, and it was just deployed at USC for university campus security. We are also working a trial with a major, private security company, which does big events. Right now, people have some great tools, visualization of hot spots, but they also need a tool to plan better, rather than only relying on their intuition. We augment the security planner, with a better mathematical model, and tools that are enable them to make more effective decisions.

What's the next step for you?

Zare' Baghdasarian: We are growing many vertical markets. If you look at the transportation and transit systems, nationwide and worldwide, that's one market. We are very close to deals to deploy this for entire operations. We are taking what we have done in the infrastructure area, and transposed this to the rail and local police, and also to universities. In that market, universities are like a big city, and have all the same security issues. The last thing we are working on, is we are applying this to cyber security. It's the same, fundamental problem in cyber security, where hackers are predicting our security plans and finding holes, and we have to keep up.

Thanks!

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