Tutorial on ADVISE modeling in Mobius



This tutorial deals with a fictitious bank.

You will create an ADVISE model to model adversaries who would like to steal money from the bank.

The scenario is open-ended to allow you to use your creativity in coming up with ways a robber could attempt to pull off a heist.

The tutorial uses an insider threat (a compromised employee).

For more info and complete parameters values visit https://www.mobius.illinois.edu/wiki/index.php/ADVISE_Bank_Robbery_Tutorial Model

Simple ADVISE model





2 knowledges, 2 attack steps, 1 goal

😰 Decision	Parameters							
Planning Ho	rizon: 2							
Attack Preference Weights						- Future Discount Factors -		
Cost:	Cost: 0.0				Cost:	1.0		
Detection:	ction: 0.2			Detection:	1.0			
Payoff:	Payoff: 0.8				Payoff:	1.0		
Access	ae							
Name		Init Value						
Insider Knowledge		1						
A Skills								
😑 Goals								
Name		Init Value	Payoff					
Money		0	1000					
Attack Executio	n Graph Adversary							

Reward model



•Create three performance variables called k_insider, k_customer, g_money. •Express their reward function according to the condition in the picture. •Set a **Instant of time** option from 0.0 to 60.0 with a step of 5.

submodels	Rate Rewards	Impulse Rewards	Time	Simulation
Available S robbery->	tate Variables (d InsiderKnowledg	ouble click to insert) e)	
robbery->	CustomerInform	ation		
robbery->	Money			

Study model



🍨 BankRobbery: robberyStud			_		×	
File Edit Help						
Study: robberyStud	Reward Model: robberyRM	1 Active of 1	1 Active of 1 Total Experiments			
	Change Reward Model		Experiment Activator			
Variable Name	Variable Type	Variable Valu	e			
Incremental Range	Functional Range	Manual Range	Random Rang	e		

Since the atomic model has no global variables you only need to create an empty range study

(because it is needed for the tool).

Simulator solver



- Create a simulator solver connected to the empty study.
- Change the random number generator to **Mersenne Twister**
- Start the simulation
- The mean of **g_money** at time 15.0 should be around **0.7**

More complex ADVISE model





2 knowledges,2 attack steps,1 goal

1 skill and 1 access

Add 3 global variables and use them as initial value/proficiency for the adversary

Access	
Name	Init Value
Teller Access	initialteller
🔴 Knowledge	
Name	Init Value
🔵 Insider Knowledge	initialinsider
A Skills	
Name	Proficiency
Sneaky Skill	sneaky

More complex example

- Values of **initialteller** : 0 and 1
- Values of **initialinsider** : 0 and 1
- Values of **sneaky** : 300 and 600

You should have a total of 8 experiments

Run the simulator again and see which kind of adversary can get the money.





- See the part 3 of the tutorial on the Mobius wiki for a possible extension.
- Use your fantasy to extend the model
- Change probability of attack step, rate of attack step, initial condition of the adversary, the adversary preference weights, the adversary horizon
- Create new ways to steal money, new skills, new knowledges, new access, new attack steps