

WHAT IS CLAIMED IS:

1 1. A method of configuring an access system for providing access to a
2 resource, the method comprising, performing by the access system:
3 receiving a set of historical access requests for a set of resources, each of the
4 set of historical access requests comprising access data identifying the resource of the set of
5 resources and including requestor information of a requesting entity and an outcome label
6 regarding a validity of the historical access request;
7 receiving a rule profile comprising rules that are triggerable by the access data,
8 the rule profile defining a profile score based on weights of rules that are triggered for an
9 access request and specifying access classifications of providing access to the set of resources
10 managed by a resource computer based on the profile score;
11 optimizing, using the set of historical access requests, the weights for the rules
12 of the rule profile within a parameter space using a cost function that includes the access
13 classifications of the set of historical access requests obtained using the weights, the cost
14 function including penalties for false positive classifications and false negative classifications
15 relative to the outcome labels;
16 receiving a current access request including new access data identifying a
17 current resource and including current requestor information of a current requesting entity;
18 computing a current profile score for the rule profile based on the optimized
19 weights;
20 obtaining one or more classification thresholds for discriminating between
21 different access request outcomes;
22 using one or more classification thresholds and the current profile score to
23 determine a current access classification for providing access to the current resource; and
24 processing the current access request in accordance with the current access
25 classification to provide a specified access to the current resource.

1 2. The method of claim 1, wherein the one or more classification
2 thresholds for the rule profile are received from the resource computer.

1 3. The method of claim 1, wherein optimizing the weights for the rule
2 profile is based on stepwise regression and/or logistic regression, a neural network, one or
3 more decision trees, or other machine learning technique.

1 4. The method of claim 1, further comprising receiving a user selection of
2 the rules to be optimized.

1 5. The method of claim 1, further comprising:
2 adding, to the rules, or removing, from the rules, at least one trial rule; and
3 computing an updated accuracy in response to the adding or removing.

1 6. The method of claim 5, further comprising considering a plurality of
2 trial rules in succession.

1 7. The method of claim 5, further comprising determining, based on the
2 updated accuracy, whether to keep the at least one trial rule.

1 8. The method of claim 7, wherein determining whether to keep the at
2 least one trial rule further comprises comparing the updated accuracy against a threshold.

1 9. The method of claim 1, wherein computing the profile score uses
2 logistic regression, a neural network, or one or more decision trees that include the optimized
3 weights.

1 10. The method of claim 1, wherein the cost function is used to obtain the
2 one or more classification thresholds after optimizing an area under a curve in a Receiver
3 Operating Characteristic (ROC) analysis.

1 11. The method of claim 1, wherein computing the profile score further
2 comprises summing a respective value of a respective weight of the optimized weights for a
3 respective rule that is triggered.

1 12. An access system for providing access to a resource, the access system
2 comprising:

3 a processor; and

4 a non-transitory computer-readable medium coupled to the processor, the non-
5 transitory computer-readable medium comprising code executable by the processor to
6 perform a method comprising:

7 receiving a set of historical access requests for a set of resources, each of
8 the set of historical access requests comprising access data identifying the resource of the

9 set of resources and including requestor information of a requesting entity and an
10 outcome label regarding a validity of the historical access request;
11 receiving a rule profile comprising rules that are triggerable by the access
12 data, the rule profile defining a profile score based on weights of rules that are triggered
13 for an access request and specifying access classifications of providing access to the set of
14 resources managed by a resource computer based on the profile score;
15 optimizing, using the set of historical access requests, the weights for the
16 rules of the rule profile within a parameter space using a cost function that includes the
17 access classifications of the set of historical access requests obtained using the weights,
18 the cost function including penalties for false positive classifications and false negative
19 classifications relative to the outcome labels;
20 receiving a current access request including new access data identifying a
21 current resource and including current requestor information of a current requesting
22 entity;
23 computing a current profile score for the rule profile based on the
24 optimized weights;
25 obtaining one or more classification thresholds for discriminating between
26 different access request outcomes;
27 using one or more classification thresholds and the current profile score to
28 determine a current access classification for providing access to the current resource; and
29 processing the current access request in accordance with the current access
30 classification to provide a specified access to the current resource.

1 13. The access system of claim 12, wherein optimizing the weights for the
2 rule profile is based on stepwise regression and/or logistic regression, a neural network, one
3 or more decision trees, or other machine learning technique.

1 14. The access system of claim 12, wherein the method further comprises:
2 adding, to the rules, or removing, from the rules, at least one trial rule; and
3 computing an updated accuracy in response to the adding or removing.

1 15. The access system of claim 14, wherein the method further comprises
2 considering a plurality of trial rules in succession.

1 16. The access system of claim 14, wherein the method further comprises
2 determining, based on the updated accuracy, whether to keep the at least one trial rule.

1 17. The access system of claim 16, wherein determining whether to keep
2 the at least one trial rule further comprises comparing the updated accuracy against a
3 threshold.

1 18. The access system of claim 12, wherein computing the profile score
2 uses logistic regression, a neural network, or one or more decision trees that include the
3 optimized weights.

1 19. The access system of claim 12, wherein the cost function is used to
2 obtain the one or more classification thresholds after optimizing an area under a curve in a
3 Receiver Operating Characteristic (ROC) analysis.

1 20. The access system of claim 12, wherein computing the profile score
2 further comprises summing a respective value of a respective weight of the optimized
3 weights for a respective rule that is triggered.