

What is claimed is:

1. A method for implementing a machine learning model execution module for automatically generating an optimal number of clusters for granting access to a plurality of applications by utilizing one or more processors and one or more memories, the method comprising:

providing a database that stores human resource (HR) attributes and profile information data of users;

accessing the HR attributes and the profile information data of the users from the database;

applying hierarchical clustering algorithm, by utilizing a processor, to create a machine learning model by clustering users based on accesses to applications that the users have corresponding to the profile information data of the users, wherein all users in one cluster have the most similar accesses to applications;

iterating the process of accessing the HR attributes and the profile information data of the users from the database until it is determined that an optimal number of clusters have been created for the machine learning model;

receiving a request from a new user to access one or more applications within the machine learning model;

automatically updating a cluster from the machine learning model to which the new user should belong based on determining a commonality between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster, wherein the commonality includes about 70% to about 90% similarity between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster; and

granting access to the new user in real time to access one or more requested applications from the updated machine learning model.

2. The method according to claim 1, further comprising:

determining the optimal number of clusters based on determining the least number of clusters with the greatest number of the commonality, wherein the commonality is a similarity between a user's existing applications and applications included in the profile to which the user belongs.

3. The method according to claim 2, wherein the optimal number of clusters is a point in a line curve of a graph at which increasing the number of clusters does not increase the commonality, and wherein the number of clusters corresponds to an x-axis of the graph and the commonality corresponds to a y-axis of the graph.

4. The method according to claim 2, wherein the commonality excludes about 0% to about 25% similarity between applications corresponding to the new user's profile information and the application corresponding to profile information of the users already belonging to the cluster.

5. The method according to claim 1, wherein the machine learning model is a role-based access control machine learning model that includes the optimal number of clusters.

6. The method according to claim 1, wherein each cluster includes unique security identifiers of all users belonging to the cluster and data regarding the users' common accesses to the applications.

7. The method according to claim 6, further comprising:

displaying the machine learning model on a graphical user interface, wherein the machine learning model includes the each cluster of the optimal number of clusters.

8. The method according to claim 1, wherein the HR attributes of each user include data regarding one or more of the following: job code, cost center, location, position, and title.

9. The method according to claim 1, further comprising:

dynamically and automatically updating the machine learning model based on the updated cluster.

10. The method according to claim 1, further comprising:

receiving a request from a new user to access one or more applications within the machine learning model; and

evaluating the received request with the machine learning model in real time to deny access to the requested one or more applications based on determining that the new user's profile information does not include the requested one or more applications.

11. A system for implementing a machine learning model execution module for automatically generating an optimal number of clusters for granting access to a plurality of applications, comprising:

a database that stores human resource (HR) attributes and profile information data of users; and

a processor operatively connected to the database via a communication network, wherein the processor is configured to:

access the HR attributes and the profile information data of the users from the database;

apply hierarchical clustering algorithm to create a machine learning model by clustering users based on accesses to applications that the users have corresponding to the profile information data of the users, wherein all users in one cluster have the most similar accesses to applications;

iterate the process of accessing the HR attributes and the profile information data of the users from the database until it is determined that an optimal number of clusters have been created for the machine learning model;

receive a request from a new user to access one or more applications within the machine learning model;

automatically update a cluster from the machine learning model to which the new user should belong based on determining a commonality between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster, wherein the commonality includes about 70% to about 90% similarity between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster; and

grant access to the new user in real time to access one or more requested applications from the updated machine learning model.

12. The system according to claim 11, wherein the processor is further configured to:

determine the optimal number of clusters based on determining the least number of clusters with the greatest number of the commonality, wherein the commonality is a similarity between a user's existing applications and applications included in the profile to which the user belongs.

13. The system according to claim 12, wherein the optimal number of clusters is a point in a line curve of a graph at which increasing the number of clusters does not increase the commonality, and wherein the number of clusters corresponds to an x-axis of the graph and the commonality corresponds to a y-axis of the graph.

14. The system according to claim 12, wherein the commonality excludes about 0% to about 25% similarity between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster.

15. The system according to claim 11, wherein each cluster includes unique security identifiers of all users belonging to the cluster and data regarding the users' common access to the applications.

16. The system according to claim 15, wherein the processor is further configured to:

display the machine learning model on a graphical user interface, wherein the machine learning model includes the each cluster of the optimal number of clusters.

17. The system according to claim 11, wherein the HR attributes of each user includes data regarding one or more of the following: job code, cost center, location, position, and title.

18. The system according to claim 11, wherein the processor is further configured to:

dynamically and automatically update the machine learning model based on the updated cluster.

19. The system according to claim 11, wherein the processor is further configured to:

receive a request from a new user to access one or more applications within the machine learning model; and

evaluate the received request with the machine learning model in real time to deny access to the requested one or more applications based on determining that the new user's profile information does not include the requested one or more applications.

20. A non-transitory computer readable medium configured to store instructions for implementing a machine learning model execution module for automatically generating an

optimal number of clusters for granting access to a plurality of applications, wherein when executed, the instructions cause a processor to perform the following:

- access human resource (HR) attributes and profile information data of users from a database;

- apply hierarchical clustering algorithm to create a machine learning model by clustering users based on accesses to applications that the users have corresponding to the profile information data of the users, wherein all users in one cluster have the most similar accesses to applications;

- iterate the process of accessing the HR attributes and the profile information data of the users from the database until it is determined that an optimal number of clusters have been created for the machine learning model;

- receive a request from a new user to access one or more applications within the machine learning model;

- automatically update a cluster from the machine learning model to which the new user should belong based on determining a commonality between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster, wherein the commonality includes about 70% to about 90% similarity between applications corresponding to the new user's profile information and the applications corresponding to profile information of the users already belonging to the cluster; and

- grant access to the new user in real time to access one or more requested applications from the updated machine learning model.