A Secure Cloud Based Architecture For A Muslim Spouse Search Website

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Abstract

The idea of online spouse search within Islam communities outside the Muslim world continues to be a debatable topic within some Muslim families that adheres to the standards, and principles of the Islamic laws and jurisprudence. The families that support online spouse searching argue that this route is safer than the face to face route. The reason they argue, is that it will minimize the face to face encounter of their daughter with total strangers. On the other hand, the families refuting online spouse searching argue that strangers can have fake profiles posted online and thus their daughter will be dealing with a total stranger that is not real. This kind of exposure will go a long way and possibly scar their daughter emotionally for a long time by filling her heart with sadness and disappointment. In this paper, we are proposing a secure layered architecture model for an online Muslim spouse search website. This secure layered architecture model will allow the Muslim families to trust the online spouse search that has been looked down on by many, due to the lack of security tools that would eliminate fake profiles and impostors.

Keywords – Muslim spouse searching, instant block, online dating, secure dating, fake profile, catfishing.

1. INTRODUCTION

The traditional way of meeting a prospective spouse by being introduced by a friend or relative is becoming less popular recently specially in Muslim communities living outside of the Muslim world. In recent years, more and more people are seeking to join an online dating site to search for a prospective spouse. Online dating has become so popular in the U.S. that one out of four couples meet online [1]. The report in [1] states that the number of people using eHarmony.com is about 20 million; while the number of people that use Match.com is around 15 million. The busy lifestyle dictates that most people resort to searching for their spouse via online dating sites. Millions of people visit a dating site at least once a month, and it’s estimated that online dating is responsible for 120,000 marriages a year [1].

Trust is a major issue that most people face when meeting a person online. Many studies have been conducted to calculate the percentage of people that have complete trust in the person they meet online. A recent study by Pew Research Center in Washington found that 30 percent of online daters search for information about their possible dates before meeting them. This figure rises to 41 percent among 18 to 29 year olds. The number of people scoping out potential love interests on social and search engines has more than doubled since 2008 [1]. The majority of the people are curious about finding information of any prior history of criminal offenses. The number one reason behind their actions is that they are not able to trust the other person online profile. Almost all online dating sites do not require any background check or identity theft. These sites have been created with the idea of financial gain. Incorporating background checks for each member will cost them a chunk of money that they would rather keep in their pockets. Also the implementation of real time background checks will discourage people with fake profiles from becoming members. This reduction in the number of joining members will directly impact the financial gain that the website owners were hoping to achieve when creating the dating site. Therefore, almost all websites opt to perform any kind of background checks prior or after a new member joins their website. Because of this, users find it very difficult to have trust in the person they are meeting online. Since this is the current theme of almost all online dating sites, some people might find it useful to seek a third party internet site that can supply background checks like instacheckmate.com. The reliance on this information to establish the trust is conceptually erroneous. The reason is directly related to the registration process. A member can steal information from a real person and become a member by using the stolen information in filling the membership registration form. A secure dating site is one that a member feels comfortable and secure by being able to report and disable contact with a fake member. This security measure is necessary to maintain the dating site free of predators.

It was reported [1] that “a staggering 54 percent of survey participants complained that they encountered a person’s profile that was misleading.” A new kind of dating fraud known as catfish is new and defined in [2] as “catfish is someone who pretends to be someone they’re not using Facebook or other social media to create false identities, particularly to pursue deceptive online romances.” According to [1], catfishing caused $50.4 million in collective losses in 2011 alone.
The Pew internet Research website conducted a research to find out the percents of boys and girls that felt scared or uncomfortable when contacted by a stranger. The numbers according to [3] were as such: “girls (27%) are significantly more likely to report feeling scared or uncomfortable as a result of the contact compared with boys (15%)”. Even with the fear factor, and the trust issues that may pose danger and harm if not taken seriously, the number of online daters are ever on the rise. In [4], it was reported that the total number of people in the U.S. who have tried online dating is 41,250,000.

The Internet giant dating site Match.com, does not conduct background checks on its members, and advises to use online government resources that are available to everyone if someone desires more information about another member [5]. Illinois State Rep. Jim Sacia told the AP, “My greatest fear would be the false sense of security, as only law enforcement agencies are properly versed in conducting such checks [1], [6], [7].” Match.com’s General Manager Mandy Ginsberg said in a statement: “If we provide background checks, can they be accurate? And if they’re not, do we give a false sense of security to people on the site. That’s the big concern I have. If someone slips through the cracks, does that create more of a risk for people to not be more prudent?” [8].

In this paper we present a secure architecture for an online muslim spouse search website. In order to classify an online dating site as secure and trustworthy, it must offer a trusting environment for its members. Members should be able to join without the fear of being contacted by a fake member who is catfishing. When a member joins a dating site, he or she has no idea which profile is real and which is not. There must be a secure layered approach that the online dating site adopts in order to maintain all member profiles real and legitimate. Upon initial investigation of the existing online dating sites, we found out that a total fake profile will be able to make connections with other members. An instant block option to defy predators that were registered using false information was lacking. Some sites ask its members to report any suspicious activity, but according to a review written by Bonnie Williams who is an active member of Plentyoffish [9], no administrative action was executed after she notified them many times of an issue. The membership of the predator who happened to be her own husband remained active. We felt compelled to propose a new architecture for building an online spouse search site to incorporate an instant block feature. Therefore, we decided to build an online Muslim spouse search site and implement this security feature. In this paper, we created a spouse search site called spouseline, with an embedded instant block feature. We wanted to build an online spouse search site for spouse seekers that are presented with various profiles to choose from without having to worry about the validity and integrity of the profile. The objective is to create enough confidence and trust that each profile on the spouse search site could be truly a prospective lifetime partner.

To summarize, most dating sites are built with financial gain in mind. Some dating sites might go a step further and ask their members to report any fraudulent activity. Now if they take these reports seriously and consequently take any action is beyond the scope of this paper. A secure muslim spouse search site called spouseline was created using a secure layered architecture. Financial gain was never the main objective, rather the security was. The security layer which encompasses the instant block feature will enable members to feel secure and protected.

The paper is organized as follows; first, section II introduces the architectural model of the spouse search site. In section III, we will discuss the implementation of each layer of the architectural design. The challenges we encountered while designing and implementing the creation of spouseline, will be touched on in section IV. A conclusion will be drawn in section V.

2. THE ARCHITECTURAL MODEL

In this section, we will present the layers that constitute the architectural model. We are proposing a six layer architecture that will constitute the pillars of the secured spouse search site. Figure 1 shows the six layers of our proposed secure architectural model.

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<table>
<thead>
<tr>
<th>Layer Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>Cloud Interface Layer</td>
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<td>User Interface Layer</td>
<td></td>
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<tr>
<td>User Verification Layer</td>
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<td>DataLayer</td>
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<tr>
<td>Inter Communication Layer</td>
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<td>Security &amp; Authentication Layer</td>
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Figure 1. The six layer Architectural Model

The first layer in our proposed architectural model is the Cloud Interface Layer. This is the layer that manages the entire cloud platform that the website is built on. The second layer in this architectural model is the User Interface Layer. In this layer, the user is offered the option to become a registered member in order to initiate a precise spouse search. The third layer is the User Verification Layer. In this layer, the user has signed up to become a registered member and a user verification step is done to validate his information and authorize his membership. The fourth layer is the Data Layer. In this layer, the user becomes a verified registered member. The member has been granted access to tools that will allow him to perform a database advanced search for a
prospective lifetime partner. The fifth layer is the Inter Communication Layer. In this layer, the user has found someone he is interested in, when he performed his search. An exchange of emails has been established. The sixth layer is the Security and Authentication Layer. This layer delivers the security and authentication to all members. The member has the power to instantly block any profile from the site if he discovers that the profile contains false information or totally fake.

3. THE IMPLEMENTATION
3.1 The Cloud Layer
This layer provides the platform that the website will be built on. The Cloud Layer consists of a text based LAMP software stack using Amazon Elastic Compute Cloud (EC2) web service. According to [10], the definition of EC2 is “a web service that offers resizable cloud hosting services to make web-scale computing easier for developers”. According to [11], LAMP (Linux, Apache, MySQL, and PHP) refers to “first letters of the four components of a solution stack, composed entirely of free and open-source software, suitable for building high-availability heavy-duty dynamic web sites, and capable of serving tens of thousands of requests simultaneously”. A private domain, www.spouseline.com was created in the Cloud Layer. Spouseline stands for the line where serious Muslim spouse seekers want to join in order to search for a spouse. Any member that joins the line to play games and hurt others will be eventually thrown out of the line thru the security model that the website was built on. The only members that are welcomed to stay on spouseline are the ones that are genuine, serious, truthful, trustworthy, and honest. Hence the spouseline domain slogan, “Better be you, or see you!” Spouseline was not created as a business for financial gain, but the objective is to create a trustworthy environment for the genuine Muslim spouse seekers, that truly register with valid information to search for their perfect match.

3.2 The User Interface Layer
Figure 2 shows the block diagram of the first layer of the proposed secure spouse search site, which is the User Interface Layer. The User Interface Layer provides two options either to sign up for free or to sign in if the user is already a registered member. The sign up or registration page is a questionnaire that consists of many fields that the prospective member has to fill out completely to provide details about his personal and living style. The registration form mandates at least one profile photo and registration will not be approved without a valid photo. At the end of the questionnaire the prospective member is provided with a text field area that he can type in a brief summary to introduce himself to other spouseline members. This field is also mandatory and less than 100 characters will not be accepted and the form will not go through for approval. This is the first impression that members will be evaluated on by other members. In order to move on to the next layer which is the User Verification Layer the prospective member must sign up and fill out the registration form completely without leaving any empty field. The registration page will not be submitted unless the questionnaire is filled out appropriately and at least one photo has been uploaded. Also the user must accept the terms and policy of the website before the submission button can be activated. Once submitted, the form is sent to the User Verification Layer so that the necessary validation can be carried out before the user becomes an authorized member with full privileges.

3.3 The User Verification Layer
The User Verification Layer starts when the sign up form has been submitted from the User Interface Layer. It can be broken down into two processes. The first process sends the email verification to the user and the second process receives the confirmation from the user. The first process generates and sends a verification email to the prospective member’s email address that he used when he filled the registration form in the User Interface Layer. The email sent contains a key that was saved in the Database along with the respective email that was used for registration, as an email/key pair. The second process receives an email from the prospective member when he clicks on the link in the sent email. Upon clicking on the link, a call back is generated which is directed to a verification script that checks for the validity of the origin of the email using the key. If the email/key pair received from the call back matches what is stored in the database then the prospective member account gets activated and the user becomes a fully privileged member of the
website. Figure 3 demonstrates a flowchart of the User Verification Layer.

![User Verification Layer Diagram](image)

**Figure 3. The User Verification Layer**

3.4 The Data Layer

In this layer, the member is now able to login and start browsing for the future spouse that he has in mind. The single menu bar that was displayed in the User Interface Layer has four options. This User Interface belongs to a non-member. Now that the user became a verified member, the User Interface Layer is slightly changed, and now displays a registered member menu. The member menu consists of two menu bars stacked on top of each other with a total of ten menu options to select from. The User Interface showing a single non-member menu bar is shown in Figure 4 which also represents the home page of www.spouseline.com. The Data Layer of a registered member that was hidden prior to verification is shown in Figure 5. It consists of various options that will aid in the search for the future spouse.

![Spouseline Homepage](image)

**Figure 4. Spouseline Homepage**

![The Data Layer](image)

**Fig. 5. The Data Layer**

Layer presents the registered member is presented with three distinct options to conduct a spouse search. The first search can be performed by clicking on the quick search button. The quick search does not provide the member with advanced filtering parameters such as city, state, distance, or ethnicity. The member can only search by gender, age, country, state, and by the type of relationship which is limited to friendship, short term, or long term. The second search option is to select the username search and conduct a search for a specific member by entering his or her username and this is clearly shown in Figure 6. The third search option is selecting the advanced search button from the menu bar as shown in Figure 7. We will not discuss the quick, and username searches because they are straightforward. We will explain the advanced search in detail, since it represents the core of the Data Layer which the hopeful member selects to search for his future spouse.
The advanced search option in the Data Layer provides the member with many filters to select from. The more filtering parameters are selected, the less the number of members that match the search criteria are found in the database and displayed back to the member. This way the member will be able to zero in on the spouse that he or she is searching for.

The following is a list of all the possible options that a member can adjust in the advanced search option as shown in Figure 7.

The filters that are offered to the member in the advanced search option are: age, marital status, country, the distance the desired spouse lives away from the searching member, city, state, preferred method of contact, religion, ethnicity, has children, wants children, smokes, drinks, height, education, body type, type of relationship, and level of readiness for a commitment. This is the core of the Data Layer, because after the member selects the values for the one or more of the above filters, all the members residing in our database that match the search parameters will be presented on the screen with a summary of their profile and a picture. If the member found his ideal match in any of the matches that were found, he or she will have the option of reading the full profile to decide if they want to establish contact with the member or if not convinced, he may perform another search with different parameters. The Data Layer functionality ends at the point where the member found the match he is looking for after reading their full profile and decided they want to establish a connection to see if the feeling of a good match is mutual.

3.5 The Inter Communication Layer

The Intercommunication Layer is the online express way that the members would use to establish connection with another member they are interested in pursuing as a future spouse. When the member found his match in the Data Layer, the link to send a message to that member is displayed enabling further connection. The reason why the send message link was hidden till this point in the search has to do with the website objective. As you recall, we want to maintain members that are serious spouse seekers and discard members that are joining just to cause confusion and play games. So by hiding the send message button until the member is seriously interested, we indeed were able to defy any predator that want to play games and click away messages to any member without serious intention of pursuing a spouse search. Figure 8 shows the link to send a message to a member. At this point, we will assume that the member found a match in the advanced search result and uses the Inter Communication Layer to send a message to his newly found match that he is interested and would like the opportunity to pursue her as a spouse if the feeling is mutual.
The member inbox is setup as conversations, and grouped by members. There is no option to delete individual messages inside a particular conversation. The member has the ability to delete all or none of the messages in a conversation. The member mailbox was designed with this restriction to preserve the history of the entire conversation starting with the first message till the last one. A member can start an infinite number of conversations with any member. Every conversation is preserved as mentioned earlier. Figure 9 shows a member’s mailbox with messages grouped as conversations.

By using the instant block method for its intended purposes, the site, with the help of its members, will be able to maintain the trust level at its peak by defying predators that are out there to distort the image of a genuine Muslim spouse search website.

4. CHALLENGES

The challenge that we want to focus on was encountered in the User Verification Layer. We needed to find a secure method to validate the identity of the prospective member. Once the registration form has been completed, and submitted in the User interface Layer, the User Verification Layer receives the completed signup form. The User Verification Layer is responsible to send a verification email to the prospective member with a key pair and then activate the member’s account once the member verifies the email by clicking on the link received in the email sent. Based on the verification method described in [13], a random key was created that was sent to the prospective member’s email address that was used when the member signed up. The swift class was used to send out a verification email in html format that includes a random key. The random key was created in two steps. In the first step, a string was created form the values of the username, email and date and in the second step, the PHP built in function md5 was used to convert the string into a random key that is unique to the prospective member.

5. CONCLUSIONS

Our website Spouseline.com was not built for financial gain, nor was it built to compete for the total number of members that signup. The website was built with a mission in mind which is to restore the trust in online spouse search in the Muslim communities. We followed our proposed secure six layer model and created a Muslim spouse search website spouseline.com based on that model architecture. At the heart of our proposed model lies the Security and Authentication Layer. This layer provides the necessary tool to keep the members that are genuine and real, and ban others if they are fake, scammers or predators. Even if our website succeeds in attracting just a few Muslim members that are genuine and truly seeking a spouse, then our goal would have been met. We would then rate our overall work a success because the idea of finding a spouse online using the proposed architecture encouraged Muslims to join spouseline and become members to search for a spouse. We are hoping that the model of the secure six layer architecture gains acceptance and provides confidence and trust in the online Muslim spouse search world, especially in the North and South America where a social life is almost non-existing. We want every Muslim spouse search site to be a sanctum and a global hub for searching and finding your lifetime spouse.
REFERENCES


