

SkillTrader - Project One

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Introduction

People tend to have problems, and usually they're easily fixable. For these problems, there often exist other people who already have some skills in solving these problems; they may even have problems of their own. Unfortunately, the availability of these people who solve problems are obfuscated by a lack of networking, or these people are professionals who tend to take on bigger problems than ones many people have such as fixing a car, learning to ski, or getting some help with jQuery.

SkillTrader aims to connect these people, who may either want to share their skills or seek help from others. This could be accomplished by trading skill for skill, skill for money, or just being someone pursuing a hobby who expects nothing in return. An important element in SkillTrader is that the users are facilitated rather than guided by our service.

For example, a professional painter may be having car trouble - nothing major, but the painter is definitely not experienced with what goes on under the hood and can't afford a \$100 estimate by a mechanic. Meanwhile, a car buff who has lovingly tended to his '95 Impala for years is looking for a creative field to break into. These two strangers have a goal but neither goal is quite pressing enough to consider spending a great deal of money anytime soon. Instead, they could join SkillTrader to network with others with skills such as these and find their answer.

We are taking on a market populated by people who have problems and seek solutions without worrying about dollar cost. Allowing the users to take the major role in the service as both the users and providers of the skill commodity is placing a great deal of trust on them; however, services like Craigslist have proven it sustainable and fairly reliable. The people we help are seeking skills that other people have already developed, allowing them to learn something new, disseminate or sell their knowledge, or just look for some personal connection over an interesting activity. It's a fairly human thing to do, and we're making it easier.

Requirements Gathering/Results

Requirements from Brainstorm

- log in / log out pages
- account creation page
- user / job profiles
 - name
 - contact info
 - picture
 - skills
 - short bio / description
 - city / location info
 - way to hide particular fields from other users if desired
 - amount of time available / required
 - date job needs to be done by
 - rating
- navigation menu
- Skills listing
- Job listing, with required skills
- skill keywords
- way to add skill keywords
- way to have skill keywords approved and regulated to prevent redundant key words
- way to group related key words (skill tree? Coder has the sub categories Java, C.. etc)
- way to add jobs
- way to search for jobs within **x** distance, with **y** minimum pay, and with **z** skills
- way to search for skilled people willing to travel **x** distance, work for **y** pay, and with **z** skills
- way to contact other users (personal messages / email system / phone numbers)
- way to rate and review users based on performance for particular skills
- way to enforce transfer of payments on completion
- way to flag users for various reasons (e.g., safety, fraud)

Requirements from Interviews

We are designing the interface for a Web service that connects people who have skills (java programming, bike repair, intimate knowledge of north Georgia wildlife, cooking) and people who need work done with those skills.

"worker" users post what skills they can offer and post their availability. "employer" users can post requested skills. The interface helps pair them up.

If you were to use such an interface, what would you want it to have?

Paul Schueth

- accuracy with a match, speed, options, ability to fine tune the search, contact information, click now to contact, etc

Ekriirke (online profile name of someone I interviewed)

- Outside of simple keyword searching, I'd make an extensive tree of subjects that people can drill down their expertise(s) on.
 - Computers > PC > Windows > Servers
 - Computers > PC > Windows > C Dev
 - Environment > Wildlife > Avian > Flamingo
 - Food > Dinner > Italian

David Perez

- Interface for the smart phone that will notify users of job requests
- credentials in the workers' profile

Blake Palacio

- categories for the skills

Kate Hoyt

- I'd want it to be easy to withhold my identity during the pairing process but easily share contact information (name, phone, location, email?) after an initial pairing has been made.
- A system of messaging within the website so that personal email doesn't have to be used would be nice, but with something that forwards messages to my email so I don't have to constantly check the website for results.
- During the "worker" information input, putting in my regular location plus an "I'm willing to drive ___ miles" if it fits the type of work.
- During the "employer" service requesting, a location if appropriate, and when searching for workers only provide ones that have said their locations and their willing to drive mesh correctly.
- Set up multiple options for pay, such as both having paypal accounts already or an easy agreement for paying upon completion in person.

Current UI Critique

There currently exist two analogous methods through which individuals can acquire the services of another: a digital bulletin board and a non-digital bulletin board. Both have usability problems caused by different aspects of each method.

Digital Bulletin Boards

The best example of a digital bulletin board, and probably the most widely-used system today, is Craigslist. While Craigslist is simple to use for both skill listers and skill seekers, there are a number of problems for each party when it comes to using the site.

One such problem is that service posters have to compete with a large number of other service posters that may advertise rates that are hard to compete with, even if these ads are not completely legitimate or if the quality of work is low. Ads are listed in order of post date and time, so postings that are not renewed frequently can quickly be driven to the bottom of the list.

For those seeking services, there exist many problems when trying to find the ideal skill lister. Because there is no rating or review system, finding a legitimate, competent lister becomes much more difficult. Service seekers have to manually sift through many ads without a way to sort them. Searching through ads isn't always feasible because the price posted by a service lister does not always correlate to an hourly price or the price that the lister will charge for a specific job.

There are also issues that affect both skill seekers and skill listers. Because Craigslist is completely free and there are minimal barriers to creating or replying to an ad, safety is a big concern for all users. The lack of a publicly available profile also reduces accountability for both parties.

Non-Digital Bulletin Boards

Examples of non-digital bulletin boards include actual, physical bulletin boards and publications like the Yellow Pages. Both are similar in that they are simple ways for skill listers to spread their contact information. The main differences between the two is that a bulletin board is a free system for a small community of people (e.g., workplace, library, local gym), while the Yellow Pages is a central repository for businesses who have chosen to pay to advertise their services.

One feature of the bulletin board is that it is typically free to list and view advertisements, and there are no barriers to doing either. Another inherent feature is that skill listers are typically located in the same geographical area as the bulletin board is (i.e., skill listers are local). For example, if a babysitter posts an ad on a bulletin board, it is reasonable to assume that the babysitter lives in the same neighborhood or town. While the decentralized and localized aspects of the bulletin board are beneficial in some situations, it can make it difficult for listers to advertise their skills and seekers to find skills. Seekers have to travel to multiple locations

in order to list or update their ads, and listers have to travel to multiple locations to get a more complete view of skill listers. Another feature that a bulletin board lacks is a system for rating and reviewing skill listers.

In contrast to physical bulletin boards, the Yellow Pages serves as a centralized, commercial repository for the listings of skill listers. Neither listers nor seekers have to travel anywhere to interact with listings. Also, because all listers have to pay a fee to be listed in the Yellow Pages, there is a financial barrier to entry that can potentially filter out less legitimate advertisements. A negative effect of this feature is that people who may be willing to provide their skills for free will not use this service to advertise. Additionally, the Yellow Pages book is a large, bulky book. This causes the user problems because it needs to be stored and because it is slow to navigate.

User Characteristics

Nicole - primarily provides skills

Every day, Nicole comes closer to finishing another prototype for mobile strategy games. Inspired by the Foursquare-based Risk-like battle in New York City last year, she wants to build more games that use players as pieces in a massively multiplayer strategy game. Her experience in game design is highly prized among her project groups at Zynga, where she's worked since graduation, earning her design lead positions for most projects assigned to her. In her free time though, she builds her own games in java for Android phones, hoping to open her own game business with these mobile strategy game ideas. When she hits a roadblock in her design process, she joins local game development jams to find inspiration and often meets friends from TAing for the introductory java class at Georgia Tech, her alma mater. However, in order to continue her work she must eat, and there's only so much boxed, bagged, and premade foods her stomach and life span can handle in a week. Thus she has taken up the formidable task of learning to cook.

David - primarily seeks skills

Growing up in a family so picky that a single drop more of sesame oil in the main dish could sway them to only eat rice for their meal, David is frustrated with eating the same five Cantonese dishes his family makes every week. In the last few years, he has started cooking late at night for his lunch to take to school the next day, preparing dishes from related Korean and Japanese cuisines. Now a freshman Computational Media major at Georgia Tech and the sole cook in an apartment of four, he has used his self-built culinary knowledge to bravely fuse different cuisines into a new dish for his roommates to test, usually a success. Of course he could have gone to culinary school, but that's too much effort to sink into what's more of a hobby. Instead, he came to Georgia Tech, where his intro to java programming class is giving him serious trouble. His inconvenient class times preclude him from attending most office hours, tutoring sessions, and jobs that he could use to pay for a tutor.

Constraints

- Constraints of the System
 - Alerting people of when they are wanted/needed
 - Getting the system “off the ground”
 - Generating the skill tree data required for the system to actually work
 - Getting enough users and jobs in an area for people to be matched up locally
 - Implementing an effective, easy-to-use search within the scope of the user-skill database
- Constraints on Our Implementation
 - Deadline (Only 1 semester to work on the project)
 - Available Spare Time (Balancing other classes)
 - Scheduling Conflicts (We have little opportunity to meet with each other)
 - Incomplete technical knowledge regarding the implementation of our system (we don't know everything we will be required to know to make this work)
 - Lack of a monetary investment for the server required to run everything
 - Short amount of time to gather requirements
 - Unclear instruction as to how thorough requirements need to be

Implications

Based on the requirements we have ascertained, and the constraints we have come up with, there are a number of things we must account for in our design. We need to make sure that we design the pages people are familiar with in a familiar way, for example login pages or account information pages. We also need to design the system in such a way that it attracts more and more people. When the system first begins, there will likely be many tasks people want done, and not many people to match up to those tasks. As the system spreads, we will have a larger variety of people, and as such, a larger variety of skills can be provided on request. The system also needs to be adaptable so that as new skills are introduced, they can become keywords, or suggested tasks, so that people will think to list more than simply their day job as the only role they can fulfill. This project is about requesting and providing services that are NOT part of the usual daily employment. We also need to consider adding in potential texting or other alternative forms of communication services, so that people can be reached without needing to check their email every 5 minutes. Not all people have smartphones with email delivery, and not everyone with a computer is in front of it constantly with their email open. We do hope to have a working prototype by the end of the semester, but that will strongly depend on how much time we can devote without pulling away too much time from our remaining classes

Requirements Summary

After gathering some of the system requirements, it has become apparent that SkillTrader is going to require an efficient and dynamic data structure to help drive the interface.

SkillTrader will need ways to sort and group skills, a way to search based on multiple constraints with user-entered data, a way to determine the distance someone must travel to get to where the job's location is, a way to filter for jobs that someone would be interested in, and a way to filter for people that would be able to accomplish jobs.

We will need to provide users with a way to advertise themselves and/or the jobs they want completed. We will also need to make sure people can trust each other since a job is likely to be the first time users will be meeting each other. We will need to find a balance that users find acceptable between protecting people's personal information and connecting people for jobs as well as providing enough information for users to trust each other. We will need a way for users to include any qualifications they may have for a particular skill, and a way for the users to rate each other on how skilled they are as well as how well the experience as a whole went. We will also need a way to flag users for misusing the SkillTrader system, and a way to warn other users what they did wrong.

We will need user profiles that are structured in a way that makes it easy to find the information you are looking for, yet open enough that users can provide additional information and draw attention to themselves without cluttering the profile page.

We will need a user to user message system to help people communicate with one another while withholding contact information. Users should have the option to turn email forwarding of messages on or off. We may also need a way to notify users remotely (on a smart phone) when someone has requested to do a job, or requested them to preform a job.

We will also need a way to transfer payments on completion. This can be with paypal, check, credit card, or anything that will generate a paper trail. The employer will then need to submit proof of paying the employee so we can have a record if the need arises.

Task Analysis

Our users will be seeking help in a skill they search for, or they will be posting a skill that they would like to offer. Generally, the users would be using any device with an internet connection, including desktop, mobile, and tablet computers. Since immediate feedback is not an issue, and the user will likely not be using it on-the-go, mobile optimization is not quite necessary; therefore, environment issues are less of a factor in the design. The only environmental variable that may be important is accessibility options and affordances for handicapped users; for example, a visually impaired student may offer tips on accessibility design in exchange for tutoring in physics.

Task Decomposition:

1. Main/landing page - user determines whether to find or post a skill
 - a. Links to about/how-to page
 - b. Includes a brief overview of the system
2. If user decides to find help with a skill:
 - a. Main page - uses the search function to narrow down list of users or scrolls through and reads list frame in current state
 - i. If search:
 1. Inputs search terms to search box and submits to regenerate list frame below (stays on main page url, the only change is the list)
 - ii. If scroll:
 1. Seeks a user's skill listing on list frame and clicks it to take further action on user page, such as reviewing details or contacting
 - b. User page - shows the selected user's full listing of skills offered and personal information. After the user moves to a particular user page from search results, it should load the page and automatically scroll to the searched-for skill via anchor
 - c. User chooses whether to contact.
 - i. If not, the user should return to the main page with the list frame
 - ii. If yes, user contacts skill-offering user with info provided on user page. This is an end condition to the task flow. We can assume the user has found what they are looking for and can close the page or make their own decision on what to do next without suggestion.
3. If user decides to post a skill they would like to offer to other users:
 - a. User navigates to their personal user page (login) or registers
 - b. Once on their personal user page, they may enter the following:
 - i. What skills to offer
 - ii. Personal contact details
 - iii. Privacy scope of skill offering (who can see what, how it's framed)
 - c. This is an end condition to the task flow. We can assume the user has found what they are looking for and can close the page or make their own decision on what to do next without suggestion.

Usage Scenarios

Scenario 1 - Nicole learns to cook, trades for help with Java

Nicole leaped over couches and leaned over tables to push the windows open for fear of another smoke alarm going off in her apartment this year. She glanced forlornly at the casualty: tonight's (almost) dinner, char siu. Too much marinade left on the pork as it sizzled under the broiler caused the liquid to pop around the oven and burn as it met the glowing grills, eschewing a puff of smoke every second and building inside the closed oven. It probably would have been helpful if she hadn't been paying so much attention to a new game she was developing and more on the edible project with the messier failure condition smoldering in the oven.

Fortunately for Nicole, she can find more help with cooking from those who actually have levels in the skill. SkillTrader users can find people with desirable skills and, in return, offer their own skills as compensation. Nicole registers with her Google account, joins the Georgia Tech and Atlanta area networks, and builds her profile with several skills that she's confident in teaching or at least providing some pointers for: game design, a few programming languages, tutoring for CS 1331 at Georgia Tech, and training for the game League of Legends. Also, being a League of Legends player for several years, she's not going to train some level 5 kid! Her services are premium, so she marks it as available by invitation only; like any scrub is going to get her supreme gaming insights. Some of the skills match common tags in the system, so that should help her be discovered more; however, it seems there aren't any tags to match her League of Legends training. Instead, she changes the skill offer to the generic "Gaming" tag and adds details to the "More Info" box for that particular skill.

With her profile configured, Nicole returns to SkillTrader's main page to search the skill marketplace for a worthy cooking mentor. The trends pane shows there's been a spike in trades for personal fitness and dieting; it is right after the winter holidays, so it makes sense. Maybe her poor cooking record and resulting starvation has helped stave off the extra pounds this time around. Submitting "cooking" to the search box directs her to a long list of users with cooking as a skill they've listed, with two figures by their name: the number of reputation score for their cooking skill and whether they're available for that skill now. The list, sorted by reputation, includes people from way outside her acceptable walking distance, so she adds a sort option for only Georgia Tech network users. "Aha!" she thinks, seeing a few users who dominate the area with their reputation score; however, he's more interested in Cantonese cuisine, and these guys probably just teach the basics to all the cooking newbies. She adds "(Cantonese || Chinese)" to the search to yield a couple promising users with the potential to teach her how to make some of the most delicious food she knows. Clicking on the user with the best reputation, the user's page opens and automatically scrolls to their cooking listing. Indeed, this guy, David Chi, offers several East Asian cooking styles and he's even from Hong Kong! He probably knows his stuff.

Nicole clicks the "Hire Me!" button next to his cooking listing, adding a few quick notes about what she's interested in and when she's available before submitting the request. David receives an email containing Nicole's message and what skill she's referencing. He doesn't see it yet, though, as he's agonizing over tonight's CS 1331 assignment. If only he had some help!

Scenario 2 - Joe needs to make some money to help get through college

Joe is a computer programmer still in college. He has good programming skills, but since he has not yet graduated, he does not have a degree that proves it. Being in college, most of Joe's

friends are also in college and are in a similar situation making it hard for him to reach out and find some work. Joe has a demanding schedule with time consuming projects and can not commit to a part time job with scheduled work hours, but he has enough time here and there and does not mind staying up late at night to finish doing his work.

Seeing a SkillTrader advertisement on one of the websites Joe frequently visits, he decided to check out the website. He doesn't know if he will be able to make much money, but since making a profile doesn't take too much effort he goes ahead and fills out the information. Joe adds some skills he has and runs a few searches for jobs he may be able to perform. Much to his surprise some one is looking for some web development. The job does not require him to actually show up, and just asks that the site be completed within a couple weeks. It is not quite what Joe wants to do for his career, but he is knowledgeable enough to be able to do the work and it doesn't require him to work specific hours. Seeing no reason not to make a little extra money on his own time, Joe takes the job. He produces a great website for the small company and receives a little extra pay and a great rating on his profile. Surprised by how easy it was for him to make some money on his own time he decides to keep looking for more jobs he can do. With his rating improving with each job he completes, Joe finds it easier to get better paying jobs that he can complete on his own time, and is able to build up some references for when he eventually graduates and seeks a full time job.

Scenario 3 - Chris provides handyman services for money

Chris works full-time as a software engineer for Google in Midtown Atlanta. While he enjoys his job there, he is spending increasing amounts of time on a personal software project. Eventually, he'd like to leave his position and spin this project off into a startup company. While he's saving as much money as he can from his job at Google, Chris is trying to bootstrap his startup and is looking for ways to earn additional income.

He's a very handy person, and in high school and college, he used to work for his dad, a licensed electrician and plumber. Chris has always helped his friends and coworkers with their home maintenance issues for free and has tried to market these skills on Craigslist, but the only people who seem interested in his services are scam artists.

After Chris discovers SkillTrader, he registers for an account. In his profile, he lists that he can offer electrical services, plumbing services, and handyman services, and he sets an hourly rate for these services. He lists his availability and his location and he chooses how far he'd be willing to travel. In addition, he types his contact information, uploads a picture of himself, and sets his availability. He finally saves his profile.

After a few days, Chris receives a request from someone with a leak underneath their sink. Communicating via SkillTrader, Chris agrees to a time to fix the leak. After this, both parties exchange their contact information via the website. The date arrives and Chris has a good experience; he performs the repairs quickly and gets paid for the work he's done. Apparently, the other person also had a good experience as well, as he gives Chris his first positive review.

Scenario 4 - Lauren needs someone to fix her dishwasher

Lauren has a successful career in finance and works for Wells Fargo in Atlantic Station, where she also lives. She has a very active lifestyle and spends a minimal amount of time in her one-bedroom apartment where she lives. An avid triathlete, she swims, bikes, and runs when she's not working in preparation for her upcoming Ironman Triathlon race in Panama City Beach, Florida. She also frequently attends concerts and goes to bars with her tight-knit group of friends.

Recently, she noticed that the hardware holding her dishwasher in place has come undone, causing her dishwasher to tip forward every time she opens the door. As she only has some basic home maintenance knowledge, she doesn't really know how to fix this problem. Because of her hours at work and her strict training schedule, she's finding it impossible to hire a handyman who will come in the evening or on the weekend.

Hearing about SkillTrader from a friend, she visits the website on her laptop and registers for an account. When filling out her profile, she skips the available skills section because she doesn't mind paying for the skill she needs and doesn't think she has anything to offer. She navigates to the search functionality and types in that she needs someone who has handyman skills or skills with appliance installation. She selects that she is willing to pay and types in her zip code. The search results page displays a few skill listers within Atlantic Station and Midtown. She selects the lister with the highest rating, Chris, and fills in the contact form. Within a few hours, Chris responds via SkillTrader. Finally, the two schedule a time to have the work done. After the mounting is repaired, Chris sends Lauren an invoice via SkillTrader. Lauren completes the transaction and proceeds to rate and review Chris.

Usability Goals

Our product has two major users groups: those who **seek** a skill and those who **list** skills. Users will likely find themselves in either group depending on their own goals, however our usability goals differ per group.

Effectiveness

Seeker: Can find a skill listing with minimal effort, helped by thorough search methods and common tagging

Lister: Should not feel uncomfortable about sharing personal information, and can expect to be compensated sufficiently for their time potentially helping someone with their skill

Efficiency

Seeker: Can traverse the site in three steps, listed as letters in the task decomposition section

Lister: Should feel comfortable with creating an account, potentially via OpenID or Google, and can understand what and how information will be displayed

Satisfaction

Seeker: Feels more like they are interacting with people and their profiles rather than a program or website. This can be accomplished by leaving more control to the user and having minimal site interaction necessary to properly use it.

Lister: Has the potential to earn points, such as a reputation or badges system. This could allow the users who list skills to feel more involved with other users. The potential to earn a "Guru" status for those who have the best reputation for a particular common-tag skill could make the user feel more appreciated.

Reflections

Because all members of our group had conflicting schedules, we had trouble finding a time during the week when we could meet to work on this project. Instead, we had to communicate electronically via email and chat, and we used Google Docs to collaborate on this document. None of us have had experienced fleshing out a project so thoroughly in a first iteration, so approaching this document was daunting and overwhelming initially; however, the standardized design process helped us get the project started. Despite this, we are still unsure how much we needed to accomplish at this stage of the project to make later stages easier, and would have liked some examples included in the project assignment. We have since come to realize that we should have tried to meet up on the weekend to avoid schedule conflicts. We could have also coordinated a little better between group members regarding when parts of the project needed to be done so others could review individual work.