MoneyWatch Final Report

Findings and conclusions regarding the process and justifications made through the course of our project.

CPSC 481-Final Project
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1. Introduction

MoneyWatch is a website that joins the forces of stock traders and developers. It relies on cooperative pool of skills from both parties to undergo in the up-and-coming machine learning innovation highlighting algorithmic trading success. MoneyWatch generates a sense of community that allows users to find and publish modules, explore and build in a web-based environment. We accomplish this by enabling users to take part in the partitioning and creation of distinct dashboards that utilize the users' expertise hence encouraging creativity through the customization that leads to new discoveries. Users will be able to monetize off the creation of their modules that are published on MoneyWatches marketplace.

Through the growth of MoneyWatch we followed a process of investigation, ideation, prototyping, evaluation, and eventually following the procedure of user-centered design we will be able to produce a final product. In this report will outline these processes.

2. Design Problem

In the present market we have an abundance of information in the form of news and social media available to us, but it's mostly unused. The only individuals taking advantage of this "gold mine" are significant corporations that search for skilled programmers and data scientists who can make sense of the data.

In our process of designing MoneyWatch we ask ourselves, how can we make this information more accessible to everyone? Furthermore, addressing this question leads to the bigger picture; creating a bridge that connects developers with the consuming population.
A focal point that MoneyWatch addresses is the flexibility and approachability that users feel on the website. From our user research we see that algorithmic trading(a huge emphasis on the coding part) can be formidable to the stakeholders without coding experience and for developers we see that they may not have the financial expertise to use their algorithm in the stock market. We have researched and designed our website to equip users with the tools to feel comfortable in algorithmic trading.

3. User Research and Findings

Our primary research method an interview. This allowed us to get a better understanding of the problem from the perspective of a business user and tackled the question of “what is useful?”. It was essential to understand what are the problems our users face, understand their current workflow, their frustrations, desired improvements and enabled them to share knowledge and recommendations with us without any restrictions. Through interviews we learned our idea was indeed viable because the news sector always has an effect on stocks and this effect tends to propagate differently in various regions making our idea useful to find correlations between the news and the stock market. We learned visualization modules prove very useful in displaying nuance information which is hard to come by without a platform of pre-loaded algorithms like MoneyWatch.

Now that we have our primary user research method, we needed to strategically choose a second to compliment it in order to receive applicable information from different perspective. Our last method was focused on ‘what is useful’, which made personas the perfect user research method to answer the question of ‘what is usable?’. In order to complete our set of research info we first needed to identify our users: Programmers, Business investors and Hybrid personalities with capabilities in both business and technology. We paid close attention to constructing these cohesive personas but it paid off substantially in guiding our application design. The main differences in between them included technical literacy, values and different interests in the use of our application.

4. Summary of your design, justifications and system tasks

We took the users research we accumulated it and applied it to our initial intended design of the application. The main tasks were logging in/out, password reset, browsing the marketplace, constructing a pipeline process from input into the final visualization and saving the pipeline to the dashboard. From our interview research data we made the following changes. We changed our homepage upon log in from a standard about us page to displaying our marketplace as it gave users more info about what we offer and how they can use it or contribute depending if they are a business person or developer. This was also used as a marketing strategy to increase exposure to our products. We included help menus along the way of the pipeline process and simplified how our tools were customized for use in order to accommodate our business persona’s lower technological literacy. Finally, we added more visualization module varieties than intended

before as we learned displaying information multiple ways was very important through the interview process.

5. Summary of Heuristic Evaluation findings

Through the use of a heuristic evaluation, some weaknesses and flaws were discovered. One of these flaws was that the general flow of the system was confusing for first time users. By not including some helpful hints, or arrows to introduce flow, users may have felt lost and perplexed by all the components. To fix this, the main navigation bar was changed to show flow using big arrows, that clearly show the path a user will take. Another issue that was discovered during the heuristic evaluation were some minor issues in our prototype. Examples of this were a back button missing on a page, or a navigation bar missing on another page. These minor mistakes were immediately fixed. Finally, another key suggestion that was made was the fact that some components in our marketplace should be sold as packs instead of individual components, such as a graphing pack that would contain numerous different graphs available for use. Improving on this, we decided to create a sub-categorization of the market, where users can find what they are looking for using subcategories, and the packs may be implemented in a future iteration.

All in all, the heuristic evaluation was a very valuable experience as it showed flaws in the system that may have been overlooked by the designers.

6. Summary of the User Testing Findings

For the user testing portion, users were asked to complete numerous tasks which ultimately lead them to completing one major task, which was creating the final graph as a result of the processes in the pipeline. These tasks included buying components from the marketplace, using them in the pipeline, and ultimately creating a graph in the dashboard. In total, these evaluations were conducted upon three users, including a developer and a researcher, who were timed and asked for comments as they worked. These user tests were extremely valuable, as they exposed some more issues that designers and the heuristic evaluation were unable to. One flaw that was uncovered during this evaluation was the fact that our help boxes were too large. This was fixed by converting the box into a question mark that would show the box when hovered over. Another issue was the fact that it wasn’t clear that the marketplace continued underneath, and this was fixed by adding a scroll bar to indicate there was more content underneath. A major issue that still lingered was the fact that some new users will be lost after logging in for the first time, especially those without much experience with stocks. To fix this, a pop-up was added that contained a blurb about the premise of the project, and how a first time user will use the

application. By utilizing user testing, design flaws and strengths were discovered, and therefore, the process was extremely valuable to the team.

7. Recommendations for Next Iteration of Design

From the process of evaluation, changes that will be considered include:

- Changes to the homepage such as switching from marketplace being the homepage to dashboard. Reasoning for this is that it will give the user direction as to understand what the end product is. Additionally from testing we have concluded that the dashboard will be where users will be spending most of their time
- A sample completed project as their homepage on the first use of the application which users can explore. This will give them a template that they can use or modify to allow for an easier use of the application.
- Have a walk through video to show them how the sample project was created. This would help the user be more familiar with the platform. The video would be an interactive tutorial.
- Reduce the number of pages by converting supporting pages such as “list of modules”, “module modification” and the marketplace pages to be popup screens which are more relevant to the information. In other words, pages that have no standalone actions to take would not need a page of its own. The pipeline and dashboard would then be the only two tabs left. All other pages in the application would be small popup pages as required in the workflow. This makes the interface significantly simplified.

8. Conclusions

MoneyWatch is on a path to designing a website that bridges the divide between coders and traders. It is obvious that the solution to this requires a significant amount of attention to design as machine learning, with a focus in algorithmic trading, is an intimidating concept. In order to attain maximum user satisfaction of our website, we followed the process of user-centered design detailed in our report. From the continual iteration of investigation, ideating, prototyping and evaluation, we will create a product that encompasses the characteristics of a good interface.

Appendix A: Heuristic Evaluation (Conducted On Our project): (1 = meets criteria, -1 = does not meet criteria, 0 = does not apply)

Conducted by: Group 1 (WynTai Chai, Parham (Sam) Chabi, Jesse Hooper, Aidan Patterson, Maha Asim)

Navigation

Checkpoint	
The home page looks like a home page; pages lower in the site will not be confused with it	1
The home page contains a search input box	1
The home page will create a positive first impression	1
Useful content is presented on the home page or within one click of the home page	1
By just looking at the home page, the first time user will understand where to start	-1
All corporate information is grouped in one distinct area (e.g. "About Us")	1
There is a convenient and obvious way to move between related pages and sections and it is easy to return to the home page	1
There are clearly marked exits on every page allowing the user to bale out of the current task without having to go through an extended dialog	1
The terms used for navigation items and hypertext links are unambiguous and jargon-free	1
The navigation system is broad and shallow (many items on a menu) rather than deep (many menu levels)	1

Comments
Homepage contains a video template which should contain mission statement and value proposition
No search box on home screen (not sure if applicable)
Homepage gives impression that this product will be easy to use
Every link in the initial pipeline is directly available from the home screen
The user may be confused between going to the marketplace or the dashboard

The about section is always next to the dashboard button
Every page is right on the toolbar and the homepage is always the logo
Every page can navigate back to the home page (the pipeline page is missing the back button)
Each item only branches off at most twice

Layout & Design

	Checkpoint	
	When a page presents a lot of information, the user can sort and filter the information	-1
	Information is presented in a simple, natural and logical order	0.25
	The number of screens required per task has been minimised	1
	On all pages, the most important information is presented on the first screenful of information (“above the fold”)	1
	Fonts are used consistently	0.9
	The relationship between controls and their actions is obvious	1
	There is a clear visual "starting point" to every page	1
	Each page on the site shares a consistent layout	0.8
	There is a good balance between information density and use of white space	0.5
	Colour is used to structure and group items on the page	0.5

	Comments
	It seems users should know what are the filters, it would be better if you have predifined filters
	In the home page I was not sure what I am seeing, it would be better to provide some sort of information.

Login font is not consistant

In dashboard how coud I access my profile?

I found the home page over populated

The color theme is too dark

Content & Data Entry

Checkpoint	
Fields in data entry screens contain default values when appropriate and show the structure of the data and the field length	0
Acronyms and abbreviations are defined when first used	1
Forms are validated before the form is submitted	-1
Field labels on forms clearly explain what entries are desired	1
The words, phrases and concepts used will be familiar to the typical user	0.5
There is a clear distinction between “required” and “optional” fields on forms	-1
The same form is used for both logging in and registering (i.e. it's like Amazon)	0
Questions on forms are grouped logically, and each group has a heading	1
The site avoids cute, clever, or cryptic headings	1
Text is concise, with no needless instructions or welcome notes	1

Comments
The website does not currently have fields where default values would be relevent
Any previously unknown terms are explained within the website

No current visible form validation for the only current form: password reset
The password reset form's field labels are common and intuitive
There is more complex jargon from computer science and economics, but the common user of this system will likely be familiar with this language
The password reset form's field labels did not indicate mandatory fields
N/A There is no register page at this time
The main data entry (Pipeline and graph creation) is fluid and graphical with the needed questions implemented with simple button selection
Each heading is self-explanatory and necessary
Text is only applied when needed and not excessively

Appendix B: Heuristic Evaluation (Conducted On Group 1): (1 = meets criteria, -1 = does not meet criteria, 0 = does not apply)

Conducted by: Group 0

Navigation

	Checkpoint	
	The home page looks like a home page; pages lower in the site will not be confused with it	1
	The home page contains a search input box	1
	The home page will create a positive first impression	1
	Useful content is presented on the home page or within one click of the home page	1
	By just looking at the home page, the first time user will understand where to start	1
	All corporate information is grouped in one distinct area (e.g. "About Us")	-1
	There is a convenient and obvious way to move between related pages and sections and it is easy to return to the home page	1
	There are clearly marked exits on every page allowing the user to bale out of the current task without having to go through an extended dialog	1
	The terms used for navigation items and hypertext links are unambiguous and jargon-free	1

The navigation system is broad and shallow (many items on a menu) rather than deep (many menu levels)	1

Comments
it looks nice, Good job - Mr. Jacob
Its in the top right where you expect search bars to be.
logo on the bottom left, location centered, available tutors visible right away
same as above, searh, tutors, and hamburger menu contains relevant info such as scheduling and contacts
the map icons are our first attempt at using the application and it was clickable with information that was expected. The hamburger menu was on the top left and search making things accessible.
No about us page found
The hamburger menu allows to for this to be achieved
The hamburger menu allows users to return to a menu, or another page. Could include a back button if needed.
Yes

Layout & Design

Checkpoint	
When a page presents a lot of information, the user can sort and filter the information	1
Information is presented in a simple, natural and logical order	1
The number of screens required per task has been minimised	1
On all pages, the most important information is presented on the first screenful of information (“above the fold”)	1
Fonts are used consistently	1
The relationship between controls and their actions is obvious	1
There is a clear visual "starting point" to every page	0

Each page on the site shares a consistent layout	1
There is a good balance between information density and use of white space	1
Colour is used to structure and group items on the page	1

	Comments

Application is designed in a way which is easy to use, however there should be a video, or someway to help users see what you offer and how they can do it in the app (Does Not have to be a video could be step popups along the way.

* Each page is consistent in colours and layouts except for the homepage map.

Color could be better used to illustrate the clickable icons. For example on the homepage, the tutors location should pop up and have their own brighter/more pronounced color from the background map. While the map could be made a more of background silent colour as its essentially used as a background. (Recommendation white or light map)

Overall* : Very intuitive application and well designed layout.

Content & Data Entry

	Checkpoint

Fields in data entry screens contain default values when appropriate and show the structure of the data and the field length	-1
Acronyms and abbreviations are defined when first used	1
Forms are validated before the form is submitted	1
Field labels on forms clearly explain what entries are desired	1

The words, phrases and concepts used will be familiar to the typical user	1
There is a clear distinction between “required” and “optional” fields on forms	1
The same form is used for both logging in and registering (i.e. it's like Amazon)	0
Questions on forms are grouped logically, and each group has a heading	1
The site avoids cute, clever, or cryptic headings	0
Text is concise, with no needless instructions or welcome notes	1

Comments
Data entry is generally intuitive.
Help Menu should be added somewhere*.
Header section at top in chat could make application look more consistent.
*Optional Suggestion: neat header menu instead of hamburger dropdown could help usability by reducing amount of clicks/task. Try to design as to not visually clutter the application.
generally very concise which is good.
*Overall: Very good, could only use a few minor tweaks.

-evaluation by Amine Benaceur, feel free to contact for clarification :)

Appendix C: User Testing

User 1

Things to measure in UT:
--Learnability/Discoverability: How easy is it for users to accomplish basic tasks the first time they encounter the design?

- Find about us info: 3.1 seconds
- Login: 1.5 seconds
- forgot my password: 7.3 seconds
- Browse the market for and find product twitter 9.12 seconds
- Build a pipeline to the dashboard: 1:45:09
- Logout: 3.2 seconds

-Efficiency(Second time w/ timer):

- Build a pipeline to the dashboard: 0:45 seconds

Comments: The basic tasks are easy to accomplish. The website is simple and straightforward enough for user to navigate through.

--**Efficiency:** Once users have learned the design, how quickly can they perform the tasks?
Just a simple click to add graph or pipeline was easy enough to perform again.
--**Memorability:** When users return to a design after a period of not using it, how easily can they reestablish proficiency?
Comments: Since the website navigation wasn't too complicated or have too many options, it was easy to perform tasks.
--**Errors:** How many errors do users make, where are these errors occurring, and how easy is it to recover from these errors?
Comments: There weren't any errors. User was able to navigate to wherever he wanted to go.
--**Satisfaction:** How pleasant is it to use?
Comments: The main page, and the "about" page design seemed neat and looked like a website, however the pages after login did not seem complete and looked

like a powerpoint page. Overall performance of using the website was done, but wouldn't call it pleasant to use.

Suggestions:

- Change "About MoneyWatch" to "About Us"
- When you press the image icon, the tab comes down on the wrong place.
- The assist box was too big. Takes up 25% of the workspace. It should be a hover over pop up. Is the help button necessary? Because the "+" button is the only button on the page, and on the next pages, "add component", "Save", or "Delete". Not too many choices to get lost or need help with. It should be called a "Help" button instead of "Assist".
- On the "add pipeline" page, the white text in the assist box isn't underlined but on the page with a saved untitled pipeline, the white text in the assist box is underlined.
- "Selecting Graphs" page should have a title or indicator saying what it is. (make the select graph page a pop up)

USER 2: Adam Benaceur

-Learnability/Discoverability(First time w/ timer) :

- Find about us info: 2.5 seconds
- Login: 2.1 seconds
- forgot my password: 8.4 seconds
- Browse the market for and find product twitter 7.98 seconds
- Build a pipeline to the dashboard: 2:26.5
- Logout: 4.75 seconds

-Efficiency(Second time w/ timer):

- Build a pipeline to the dashboard: 50.6 seconds

Things to measure in UT:

--Learnability/Discoverability: How easy is it for users to accomplish basic tasks the first time they encounter the design?

Comments: The basic tasks are easy to accomplish. User did not have any issues logging in, out, finding about us page or completing any basic functionalities.

--Efficiency: Once users have learned the design, how quickly can they perform the tasks?

Comments: User struggled with pipeline feeling confused at what point they should do what. This seemed to be because the process was not explained well enough before the user tried accomplishing it.

--Memorability: When users return to a design after a period of not using it, how easily can they reestablish proficiency?

Comments: A second time after the interview the time to complete a pipeline was significantly reduced by more than half the time. Which shows video would be helpful;.

--Errors: How many errors do users make, where are these errors occurring, and how easy is it to recover from these errors?

Comments: Errors were irrelevant, more so just confusion on what step is next.

--Satisfaction: How pleasant is it to use?

Comments: Everything before logging in was great, however the pipeline process was not very satisfying to use. The website layout and aesthetics however was very nice.

QUESTIONS:

Do you have any suggestions for improving this application?

Comments: Process is confusing, there should be guide tips all throughout the process and on the marketplace for first or new users. The same assist in the pipelines should be all throughout the website. Modules should be clickable to display info about them.

- there should be a visible scroll bar on the marketplace because I didn't realize I could scroll down and was just staring at the components at the top.

- provide a video on front page of how the application is to be used once the user logs in. A getting started tutorial, and some for other use cases.
- should provide live chat with another human, to help problems which wasn't addressed or aren't as common as others.
- most of the errors I experienced were in the checkout and the pipeline. These are the most complicated places.
- logout should be its own button on the bar.

How satisfied do you feel using this out of 10?

-4/10
- could be designed “cleaner”
- menu could be improved
- for the prototype maybe only list the modules that can be used. It doesn't make sense to put ones you can't use and it only further confuses the users.

USER 3

-Learnability/Discoverability(First time w/ timer) :

- Find about us info: 1.8 seconds
- Login: 3.4 seconds
- forgot my password: 8.8 seconds
- Browse the market for and find product twitter 6.78 seconds
- Build a pipeline to the dashboard: 3:08
- Logout: 4.54 seconds

-Efficiency(Second time w/ timer):

- Build a pipeline to the dashboard: 1:06 seconds

Things to measure in UT:

--Learnability/Discoverability: How easy is it for users to accomplish basic tasks the first time they encounter the design?

Comments: User thought it was a bit hard to actually figure out what to do. Clicking the buttons made sense, and it was pretty intuitive what they did, but not sure what the entire system was doing.

--Efficiency: Once users have learned the design, how quickly can they perform the tasks?

Comments: Once you go through the process a couple times, it's easy to tell what to do next. However, user says this may have been because the only clickable buttons were the ones that were relevant.

--Memorability: When users return to a design after a period of not using it, how easily can they reestablish proficiency?

Comments: User was able to memorize the path to creating a new pipeline for the most part, having a few mistakes on the way. These mistakes including clicking the wrong buttons, or attempting to take shortcuts that ended up delaying the process.

--Errors: How many errors do users make, where are these errors occurring, and how easy is it to recover from these errors?

Comments: Errors were mostly non-existent other than a few wrong button clicks. User felt it was fairly easy to recover from these errors.

--Satisfaction: How pleasant is it to use?

Comments: User thought the overall experience was pleasant to use, and liked the layout of the entire design.

QUESTIONS:

Do you have any suggestions for improving this application?

User suggests creating a small instruction box on the first page (when you are logged in), or a video guide on what to do for the application. Also, the user suggests either using separate colors for each category in the marketplace, or keeping it all the same. (does not like how it's two colors) Also says that marketplace can be separated into categories.

How satisfied do you feel using this out of 10?

7/10