Inception Phase

Read Chapters 13, 14, and 15 & 17

Requirements

1. Class projects
   1. List of needs and features, the important ones
   2. List of requirements, including non-functional
   3. Min 10 user stories for you main features(as a “type of user”, i want “some goal” so that “some reason.”
   4. Modeling, case diagrams, flow diagram, database design or ER diagram, take a photo and place in repo
   5. Architecture drawing. Hardware/software/network
   6. Write a vision statement, example in Software Engineering slides from last term
   7. Complete in a cyclical approach, go back to the basics until we get it right
2. Team project idea Q/A
   1. What is new/original about this? What are related ideas?
   2. Why is the idea worth doing? Why is it useful?
   3. What resource would be required? Additional API? Frameworks or platforms?
   4. What Algorithmic content is there?
   5. Difficulty rating 1-10
3. Git pull request/branch/commit evidence
   1. Each member must practice the git workflow, with branches as Master and Develop. Print out evidence that show every member is following this workflow, everyone must be able to accept, merge, pull request and must be accepted/merged before the meeting each week with your advisor.

**Class Project Needs/Features**

1. Needs a heart rate monitor
2. Needs a GPS tracker
3. Needs a Step monitor
4. Needs a switch to turn it on/off
5. Needs a clock/stopwatch
6. Needs a date input option/or auto update when uploaded to cloud
7. Needs a login screen to distinguish users.
8. Feature: Provide Graph for Distance and route.
9. Feature: Pace during run(steps per min/hour/mile)
10. Feature: Provide Graph for heart heart over time.
11. Feature: (For coach) Provide Team Graph analysis:averages and outliers
12. Feature: Allow users to view their own individual records in detail
13. Feature: Allow coaches to view each team members individual records
14. Feature: Upload to cloud/database

**Class Project Requirements**

1. Graph to display data
2. Algorithms to calculate stats: Mean, median, mode, min, max
3. Map to display distance and route
4. Database to store information
5. Login Screen to distinguish individuals and coaches
6. Buttons or touch screen components to allow users to navigate the application

**Class Project User Stories**

1. As a coach, I want to view each athletes progress and records from the device, for training purposes (rahevin)
2. As an athlete, I want an option to turn off and on my recordings for my activities, so that I may track my results. (rahevin)
3. As a coach, I would like to be able to view my athletes averages and outliers, so that I may adjust my workout plan. (rahevin)
4. As an athlete, I would like to able to view my own averages for heart rates and distances, so that I may better myself for future work outs.(rahevin)
5. As an athlete I would like to see my workout history (to a set amount of time) to keep track of my workouts over time. (Aaron)
6. As a coach, I need to track my athletes’ workout history (to a set amount of time) to keep track of workouts over time and identify problems. (Aaron)
7. As a parent, I need a way to to view my student’s workout data. (Aaron)
8. As a parent, I need a way to track my student’s progress (workout history). (Aaron)
9. As an athlete, I would like to compare my results anonymously to the results of my teammates so I will be more motivated for future workouts. (Melissa)
10. As a coach, I would like to be able to see which athletes are training too hard so that I can make sure they are exercising in a way that is healthy. (Melissa)
11. As an athlete, I would like to have a record of my training that I can share with others so that I can take data with me when I graduate if I decide to continue to pursue the sport after I complete high school. (Melissa)
12. As a coach, I would like to be able to keep track of each athlete’s condition so that I can adjust workouts in case of injury, etc. (Melissa)

**Algorithmic Content:**  Create an algorithm to make a histogram based on certain selection criteria from the existing data. IE: Look at running efficiency over time.

**Unfortunate Implications User Stories**

1. As a writer, I would like a setting to be able to search for each different meaning of a word that I highlight, so that I may be clear with my communication(rahevin)
2. As a professional employee, I would like a setting that would provide a few word suggestions in place of possible incorrect phrased words I have placed, so that I may maintain a professional environment. (rahevin)
3. As a writer, I would like a setting where an algorithm auto searches what I have wrote and highlights possible words that may have different meanings, so that I am aware or may change my wording (rahevin)
4. As a student, I would like a setting that maintains previous professional used words that suggests them for later use when I end up using the same unprofessional word again, so that it may train me to be and write more professional. (rahevin)
5. As a professional employee, when emailing international co-workers, I need an option to ensure that a word doesn’t have alternate cultural meanings or implications (Context). (Aaron)
6. As a writer, I need to be able to edit the text in the window to test changes to words and context. (Aaron)
7. As a grandparent, I want to be able to email my grandchild using slang I know the meaning of so that I don’t accidentally use slang the wrong way. (Melissa)
8. As a student, I want to know when an academic essay is too informal so that I can fix the tone. (Melissa)
9. As an interviewee, I want to use the correct tone in my email to potential employees so that I sound professional. (Melissa)
10. As an advanced user, I would like to change what words and context can be left in, to allow more flexibility for informal writing (IE: Ignore button). (Aaron)
11. As a writer, I want to specify the purpose/audience of my work so that the feedback I receive is specific to my needs. (Melissa)
12. As a user without an extensive English background, I would like to be able to view explanations for terms so that I can understand my options. (Melissa)

**Unfortunate Implications Research**

**Short Explanation:**

Writing and word checking app that combines a dictionary and possibly machine learning algorithms to check the context of an email, letter, or other written work.

**Possible Difficulty Rating: 10/10**

**Resources:**

<https://github.com/zdict/zdict/wiki/Urban-dictionary-API-documentation> API documentation for the Urban dictionary API specificially

<https://github.com/zdict/zdict> The framework for the above API which is intended to work with any kind of online dictionary, so this may be useful for other online dictionaries (slang or otherwise), as long as we make sure to check the usage guidelines for individual dictionaries before deciding to use them.

<https://cloud.google.com/natural-language/>

<https://cloud.google.com/natural-language/docs/>

<https://www.programmableweb.com/category/dictionary/api> Lots and lots of dictionary api

<https://greensdictofslang.com/> Online dictionary of slang throughout history

Similar websites courtesy of Rahevin [(<https://www.grammarcheck.net/editor/> );(<http://www.polishmywriting.com/> );(<http://www.gingersoftware.com/synonyms/synonymstool> );(<https://www.slickwrite.com/#!critique/features> )] the last one is from what I think is what you are trying to accomplish.

**Questions:** Feasibility in using natural language processing for context implications (more like research project)?.

* What is new/original about this? There are a lot of resources to help you write and there are some writing apps and websites with various amounts of automation, but the ones I’ve been able to find have been related to grammar rather than checking the content of writing for things like slang, tone, or appropriateness to a specific type of writing. Is this because it’s a new idea or does this mean it’s not feasible? I’m not entirely sure, but I definitely think it’s an idea that has promise. Related websites include grammar checking tools like Grammarly (<https://www.grammarly.com/>) and WhiteSmoke (<http://www.whitesmoke.com/>)
* Why is this idea worth doing and why is it useful? I (Melissa) have worked as an English tutor for both native and ESL/ESOL (English as a Second Language/English for Speakers of Other Languages), I’ve noticed various errors unrelated to grammar and punctuation that come up again and again: New college students who don’t know not to include first or second person pronouns in academic essays, persuasive essays that look more like rants, well-meaning students unknowingly referring to minorities by previously acceptable terms that are now considered offensive. Written communication has only become more important in a digital age, but many people lack the necessary awareness of their own writing to identify problems so they can look for solutions and there just isn’t a tool out there currently to get them to a place where they can help themselves.
* What algorithmic content is there? Well, there’s the machine learning stuff, obviously.
* Other ideas: checking tone, formality, whether a paper is acceptably academic, etc. I still think the possibility of checking against Green’s Dictionary of Slang for when slang was used might be useful for authors who are writing historical fiction.

**E-R Diagram:**

**A more in depth explanation of what Unfortunate Implications would look like in practice and the steps that would be required to make that happen, courtesy of Melissa:**

1. Train a neural network to recognize writing categories using good examples of those types of writing. What this means is that you’d have training data for the different types of writing and they would be labelled. Examples of types of writing include things like essays, professional emails, creative writing, etc. We are not looking to teach our model anything complicated. We just want it to be able to look at a writing sample and compare it to the types of writing and detect which type it is closest to. There are lots of examples of this being done and plenty of tutorials the discuss how it can be done. Here are a few resources I found: <https://medium.freecodecamp.org/big-picture-machine-learning-classifying-text-with-neural-networks-and-tensorflow-d94036ac2274> <https://www.engadget.com/2015/12/02/neural-network-journalism-philip-k-dick/> <https://msdn.microsoft.com/en-us/library/dd206981(v=sql.120).aspx> <https://github.com/karpathy/char-rnn>
2. Now we come to the actual user interface. The writer pastes their text onto the website or uploads it. Next, they select what type of writing they were trying to do. Once they’ve done so, they can submit their writing to be processed. Using the neural network, the program compares the user’s writing sample to the different types of writing it has been trained to recognize.   
    There are two possible outcomes here: Either their writing is closest to the type of writing they intended it to be, or it is closer to a different type of writing. Imagine, for example, that the user wishes to check the essay they wrote for one of their college classes. If the neural network classifies their writing as fiction rather than an academic essay, this tells us something. It is likely that their language is too informal or their tone isn’t impartial. There are multiple issues that could be at hand. The machine learning will not tell us *what* the issue is, merely that one exists. This will lead us to the next step.
3. Should the machine learning classify a user’s submission as the wrong type of writing, the program must determine why in order to be able to offer advice on how to fix the problem. (If the writing classification matches the user’s intended type of writing, skip this step.) This is where programmed rules will come in. Rules apply to a specific type of writing and will cover things that should or shouldn’t be done. Oftentimes, a rule will involve a specific set of words.   
    Let’s return to the idea of an academic essay and explore some of the types of rules that might apply to this type of writing. One mistake I’ve noticed a lot in the essays of new high school and college students is the use of first and second person pronouns. Outside of a few very specific types of essays, the words “I” and “you” should not appear outside of quotations in an academic essay. (Luckily, what I am currently writing has a more informal tone.)   
    Another mistake I see a lot is either weak or biased language. Examples of weak language include words like “think.” “Researchers suggest the failure to address the problem will lead to further damage” is a much stronger sentence academically than “Researchers think the failure to address the problem will lead to further damage.” There is also the inverse problem that is created by the use of biased language. Speaking in absolutes in an academic paper is something that should be done only rarely, if it is done at all.  
    These are just a few examples of rules that might be checked for once it is determined that the writing example provided doesn’t easily fit into the intended category. The program would check for each of them and inform the user of any issues based on these rules it does find and how each of these issues should be fixed.
4. The next step continues on from either point (whether the writing was determined to be of the intended type, which would suggest it has the proper tone, or it was classified incorrectly and the program checked it against the rules in order to suggest changes.) At this point, the program will check for offensive or inappropriate slang terms and highlight any that it finds. Definitions of any highlighted words will be given so that the user can decide for themselves whether or not they meant to use that particular word. This will make use of the Urban Dictionary API. As for further practical details on the best way to accomplish this, more research will be required.
5. The above are the most important features of the project idea, but there’s definitely more that could be done with it. I often see people reaching for a Thesaurus, without bothering to check the dictionary definition for whatever synonym they pick, to disastrous results. Then, of course, there are the previous ideas of checking historical word usage for writers of historical fiction or the more fun idea of guessing a year something was written. The latter of the two could obviously be accomplished with a neural network that matches categories for different years (Project Gutenberg would provide quite a bit of training data that would be ideal for this purpose) much like the one used for writing types above. There is already a fun little web app which analyzes a text to tell you what famous writer your writing style and word choice is closest to and I imagine it uses a similar method (<https://iwl.me/>), so the idea strikes me as one that is very doable. (Looks like I Write Like is open source! <https://github.com/coding-robots/goiwl>)  
    Really, writing is very broad and varied, so the project offers plenty of room for growth and any number of additional features that could be added should we find there’s extra time after finishing the main content. There’s a lot of potential directions we can go with the idea.

**LandingPad User Stories**

1. As a heavy social media user/or business, I would like an option that allows me to post to several platforms with a single post, so that I may save time.(rahevin)
2. As a non-heavery social media user, I would like a filter, that allows me to sort out either people or certain posts, so that I may save time and reduce my newsfeed.(rahevin)
3. As a social media user, I would like to be able to view multiple social media types on a single platform, so that I don’t have to switch apps continuously. (rahevin)
4. As a social media user, I would like to be able to perform most tasks on this single platform that I may do on the original app such as, (search friends, post, notifications, delete, upload, esc..), so that I’m more inclined to use this app. (rahevin)
5. As a user, I need to see an error message if one of the social media panels doesn’t load properly. (Aaron)
6. As a user, I would like different options for displaying the content on the page or allow me to arrange the panes and change the colors how I want. (Aaron)
7. As a user, I would like the option to change which social media platforms I want displayed (IE: I don’t like twitter (who really does - rahevin)). (Aaron)
8. As an advanced user, I would like to have multiple of the same social media visible (IE: My personal facebook page and my business facebook page) to edit both on the fly.
9. As an advanced user, I would like to be able to decide to post to only some or to all of my accounts if I have multiple accounts or sub classifications for a single platform (i.e. a page or group run from your Facebook account, a secondary blog attached to your main Tumblr, etc.) so that I can target my posts to the correct audience. (Melissa)
10. As an advanced user, I would like to be able to specify how parts of a post are used so that the tags I use for organizational purposes on Tumblr can be included as hashtags or omitted entirely on platforms like Twitter and Facebook. (Melissa)
11. As an advanced user, I would like to be able to have variations on a post when I make a batch post so that I can include more information on a platform like Facebook without going over the character limit on Twitter. (Melissa)
12. As a social media user, I would like my options for displaying, posting, and the like to be customizable based on how I use social media so that I can choose to create a very customizable experience with more extensive options if I am an advanced/heavy user or a simpler and more streamlined interface that I won’t find confusing if I’m a casual/light user. (Melissa)

**LandingPad Research**

**Algorithmic Content:** A Sorting Algorithm(Displaying Posts, filtering in/out content); An Algorithm that allows a post to be made for multiple platforms;

**Short Explanation:**

LandingPad will be for social media users and businesses who want both speed and convenience. The application will have multiple social media platforms in one app. The app will use a database to store the users’ credentials to the social media platforms and to the app itself. It differs from existing offerings by combining each of the social media platforms into one single page app. LandingPad allows users to customize how they will receive their news feed through filters, sorts, and even how it is displayed on screen.

**Difficulty Rating:** 8.5

**Resources:** A SquareOne account for each platform; I think we should choose three then tack one on as a feature later if we have time.

SquareOne Azure account,

Facebook API (<https://developers.facebook.com/docs/facebook-login/permissions> ),

Instagram API(<https://www.instagram.com/developer/authentication/> ),

Twitter API(<https://developer.twitter.com/en/docs/basics/authentication/guides/access-tokens> ),

Tumblr(<https://www.tumblr.com/docs/en/api/v2>),

SquareOne database.

**Questions:** New/Original Idea, or related websites? Hootsuite has done something similar although it costs between $10-$29 monthly and has each platform on a different column displayed on a single page. Everypost, costs $10 a month, allows a user to post to multiple media sites, although you must click on each site to few those newsfeeds, rather than have them in a single display. So this idea has been done before but, not implemented in the same way we would like to approach it. We would like each platform to be displayed (started out sorted by timestamp) on a single page with a small tags stating which platform it is from in small post blocks. This idea is worth doing because it brings multiple social media platforms together in one place saving users time and providing a longer lasting experience on the app. Why is this not boring? Having all posts from many different platforms in one place allows users to “be” in multiple places at once, allow them to be more engaged in current events with their friends and not miss a single moment.

**E-R Diagram:** ?Milestone 3?