

Topikos - Sprint #1

*Chino Catane
Surya Das
Austin Gary*



*Riana Jara
Nhat Le
Alex McBride*

Localr

BRD Updates

Things updated (BRD V2.0):

1. SWOT
 - a. Opportunities
 - b. Threats
2. Technology & Depth
3. User Need



Goals

- 1. Provide news that is localized and more relevant to users**
We want to provide news that is in or near where the user lives. This news can consist of crimes, sports, city events, local politics etc.
- 2. Provide news in a way that is easy to access and understand**
We want to try to give clear, concise summaries of news stories to users so that way they can be informed without having to read long news articles. (However, if they wish to view the actual article, they can view it through a link that will be provided in the summary)



Goals (cont'd)

3. Provide an alternative to social media for news

Many people use social media as their news source. We want to give an alternative app that specifically focuses on presenting news and not a mix of different types of information.

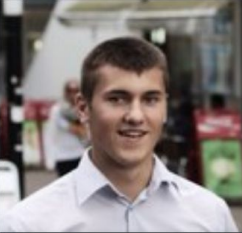
4. Bring innovation to presenting news by having a map interface as the primary interface

We plan to use the Google Maps API to create the primary user interface, where it will pinpoint locations that news has been published in and the user can click to view a summary of that new



User Personas


PROJECT: untitled PERSONA: David Busshart

NAME	TYPE	
David Busshart	Rational	
	Goals: As a college student searching for a job, he's interested in news related to his field of study. And since he wants to work at a local company, an app that helps him have easy access to news about the local companies would be great help.	
	Quote: I just want to read news that is meaningful to me without going over endless posts on Facebook	
Demographic	Background: Like many of his friends, he doesn't really care about news that does not directly affect him. Also, he doesn't have time to read so many articles on Facebook or social media. He would love to have a source of news that is relevant to him.	
Technology	Motivations: With this app, we can help him get access to news that's beneficial to him, ranging from what's happening in his local area, to job related news.	Frustrations: Wasting time looking online about information he want to learn about his local area
Browsers		



User Personas

PROJECT: untitled PERSONA: Linda Woods

NAME	Linda Woods			TYPE	Rational
	Goals: To find a source of news that is customized to her interests, and can help her keep an eye on real estate in her local area.				
	Background: As a real estate agent, understanding the housing market, especially of her local area is crucial for her career. This app can help her get access to news that's is actually relevant to her career.				
	Demographic		Motivations: In need of a source of news that is actually relevant to her interests		
	Technology		Frustrations: Tired of reading irrelevant news		
Browsers					



Female 32 years

Los Angeles


Married

Real estate agent

Technology










Browsers





User Personas

NAME Henry Estrada		TYPE Artisan	
		Goals <ul style="list-style-type: none">• Serve as a positive influence in the lives of the young people he teaches and coaches.• Travel• Maintain work-life balance• Settle down with his long time girlfriend	
		Quote <p>“<i>Carpe Diem</i>”</p>	
Demographic <p>♂ Male 29 years</p> <p>📍 Arizona</p> <p>Single</p> <p>High School English Teacher</p> <p>\$65,000</p>		Background <p>Henry has been a high school English teacher for a couple years now. Having played baseball at the Community College level before transferring to a four year university, Henry also serves as a coach for his school's junior varsity baseball team. He has been in a steady relationship for a while, and is starting to think about settling down.</p>	
Technology <div></div>		Motivations <p>With respect to news media, Henry gets a lot of it from traditional outlets delivered digitally (Washington Post, New York Times, etc...). He discovers news mainly through push notifications from applications on his mobile phone and / or social media accounts (Facebook, Instagram, Twitter). Being a high school English teacher, Henry appreciates well researched investigative pieces, but mostly only has time to read short articles on a daily basis.</p>	
Browsers <div></div>		Frustrations <p>Henry likes keeping up with current events so he can tie them in to his classroom lectures and activities. While he believes discussing global issues is an important learning tool for his students, he also wants to encourage them to be active in their local communities.</p>	

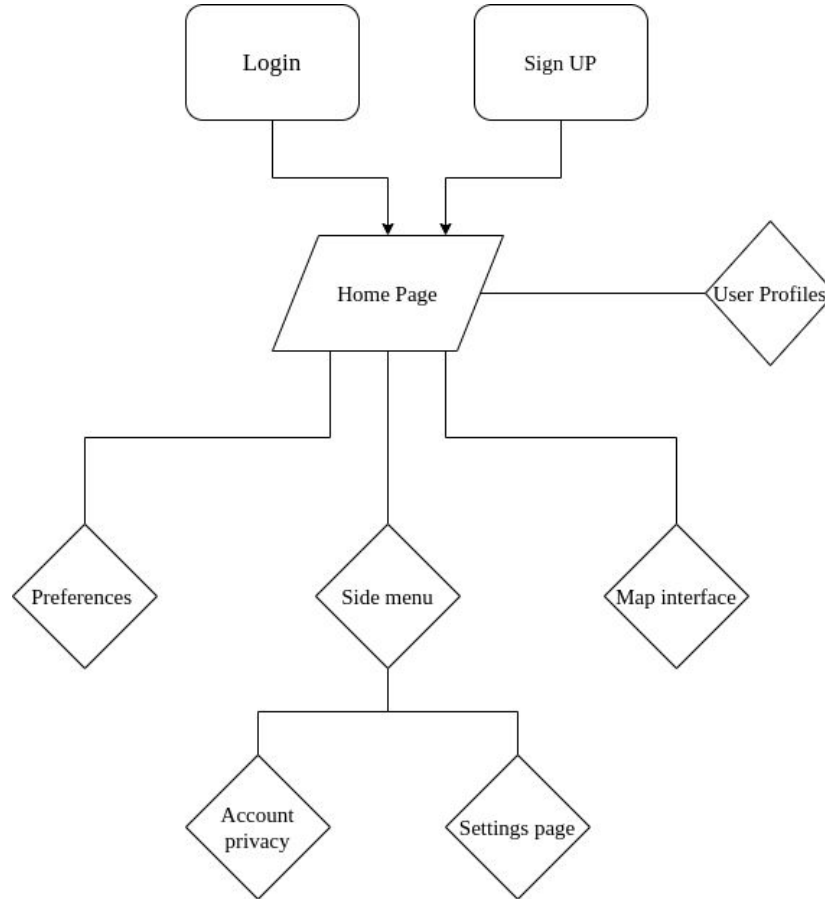


User Stories

- As a user I want to be able to sign up for the app using email and password
- As a user I want to be able to login to the app to save my preferences
- As a user I want to be able to retrieve my account
- As a user I want to be able to set my location
- As a user I want to be able to click on a map icon to see the the summary of the article and link to original article
- As a user I want to have a list of articles that I have opened
- As a user I want to be able to periodically update the map and news
- As a user I want to be able to save news
- As a user I want the app to notify me when a news story happens nearby



Server Sitemap



Page Descriptions

Login Page

- Allows the user to enter a username and password, or use their google (and apple?) account to login

Register Page

- Allows the user to enter a username and password to register an account for the service

Location Page

- Allows the user to change the map location if their location is not detectable

Map Page

- Shows the user locations of news nearby with clickable icons

Summary Page

- Shows the user a quick summary of the news article



Page Descriptions (cont'd)

Menu Page

- Allows the user to open settings and other menus

Filter Page

- Allows the user to select what types of news they are shown

Settings Page

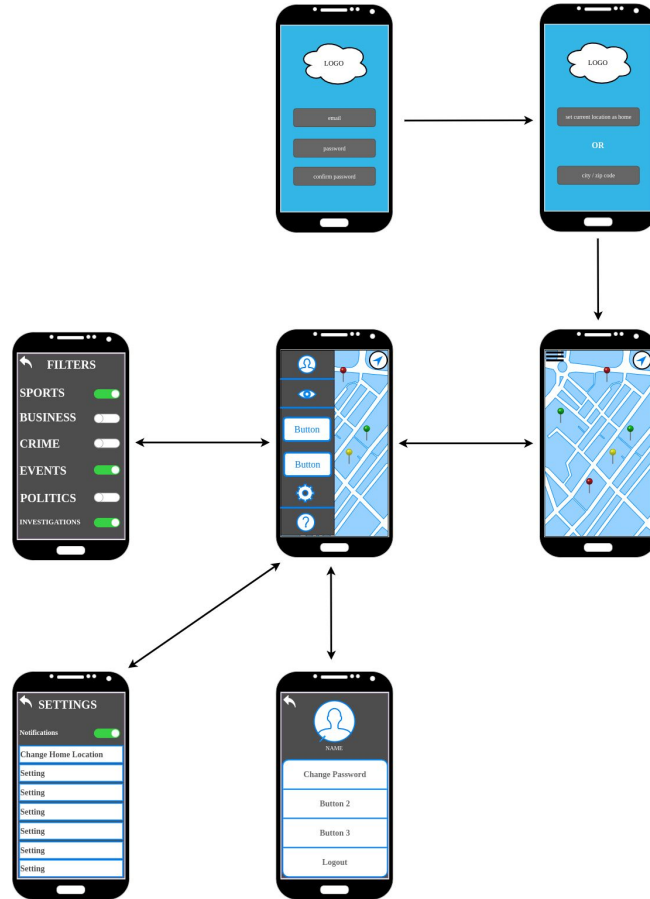
- Allows the user to change the look and feel of the app along with other things

Profile Page

- Shows stats and allows the user to change their password if applicable

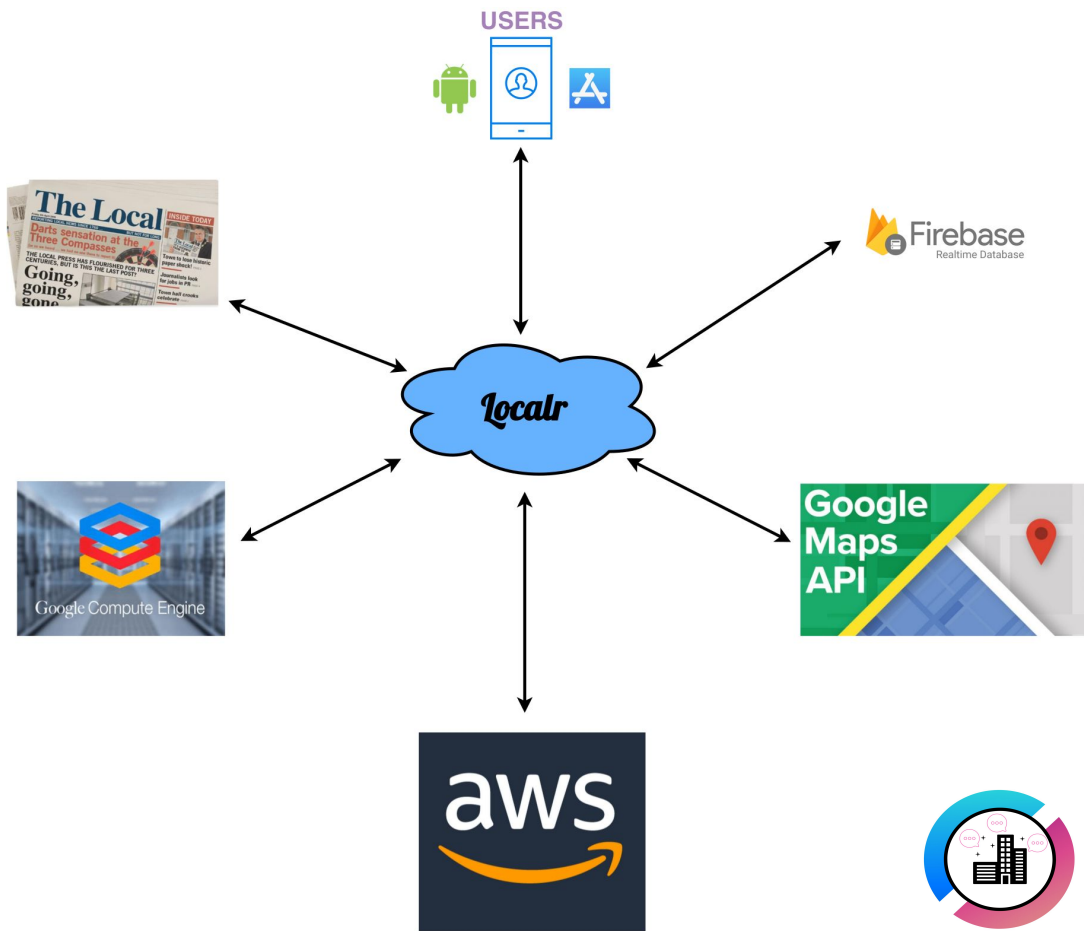


Wireframes



Interfaces

- **Users :**
Application deployed on iOS / Android mobile devices
- **Local News Publishers :**
Content supply
- **Firebase Realtime Database :**
User authentication
- **Google Compute Engine :**
Training Machine Learning model
- **Google Maps API :**
Our primary user interface
- **Amazon Web Services :**
Host application server



Additional Functional/Non-Functional Requirements

Requirements

Additional Functional Requirements

- ☐ Authentication/User Validation - The system needs to be able to validate/authenticate user's identity when password-email combination is not found in the database.
- ☐ Historical Data - The system should be able to keep a track of user and app history regarding news reports, dates, and filters.
- ☐ Response Time - The Local system should respond in real-time to any filter changes or news updates.
- ☐ Filter Control - The application must allow users to set news topic filters to some degree, and must be able to display these filters and limit these filters accordingly, as well.

Non-Functional Requirements

- ☐ Modifiability - The system must keep a relatively similar design to initial interface/page designs, and any changes to elements in the design must only change that element and that element alone.
- ☐ Usability - User interface must implement a design with understandable, neutral font, images, and icons.
- ☐ Interoperability - The app must work in constant correlation with the User database, and the machine learning aspect of the news reporting.
- ☐ Reliability - News headlines displayed on the map must be current and must be updated for continued reliability.



Performance Requirements

- The app launch time should be less than three seconds to not frustrate the user.
- The map's portion of the app should allow for 1,000 concurrent users
- Each user should be able to send 5 update requests per hour
- The map should scroll seamlessly on mid range phones.
- Screen to screen response time should be under 2 seconds
- The server should update news stories every one to two hours



Future Iterations

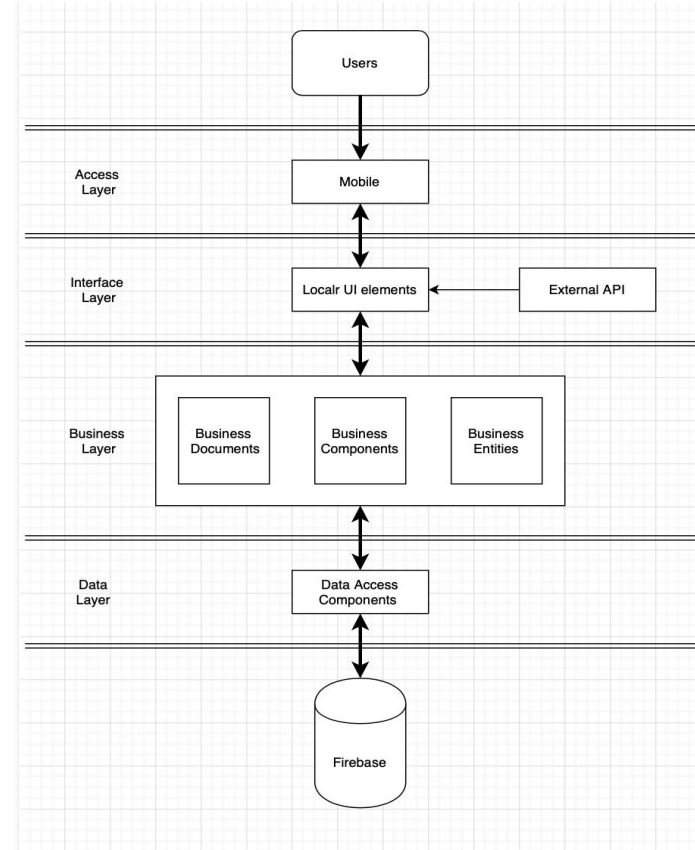
1. Add more users stories
2. Add feature – short description of articles
3. Add feature – multiple news filters applied at once
4. Add feature – sharing articles
5. Add feature – save locations that they want to view news in



Architecture Diagrams

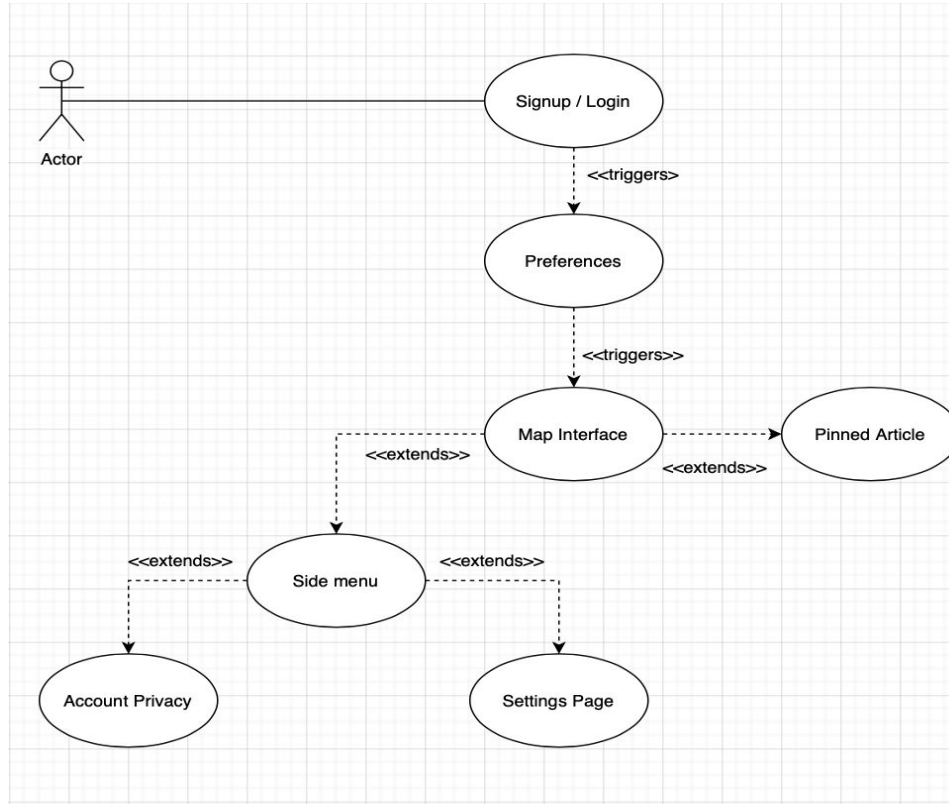
System Information Diagram:

- Architecture Pattern: Layered Architecture
- Languages and Frameworks: Javascript, Node.js, ReactNative
- Databases used: MongoDB or PostGRESQL
- Cloud platform: AWS
- API's used: Maps API, News API, Firebase API



Architecture Diagrams

Use Case (trigger and event):



Architecture Trade-off Analysis

Criteria/Selection	(Integration of Maps Interface w/ User Database)	(Integration of Article Filtering with User Choices)	Weight
<i>User Recognition</i>	+	+	10
<i>Database Searching</i>	+	+	10
<i>Security & Maintenance</i>	-	+	5
<i>Migration between iOS & Android</i>	-	+	5
<i>Affordability</i>	+	-	5



Machine Learning Model - Bag of Words

Objective : Classify news articles by topic

Key Ideas : (1) Use headlines to represent articles

(2) Treat headlines as a collection of unrelated words thrown into a bag

(3) Similar bags contains similar words



Machine Learning Model - Bag of Words

Step 1 : Build a Dictionary

"Rockets Letting Russell Westbrook Be Himself" (Sports)

"InfoWars host Alex Jones charged with a DWI in Texas" (Entertainment)

Dictionary =

{rockets, let, russell, wesbrook, infowars, host, alex, jones, charge, dwi, texas }

Machine Learning Model (cont'd)

Step 2 : Calculate conditional probabilities and save

Topics

News Article Dataset



Dictionary

	T_0	T_1	T_2	...	T_m
w_0	$P(w_0 | T_0)$	$P(w_0 | T_1)$	$P(w_0 | T_2)$	...	$P(w_0 | T_m)$
w_1	$P(w_1 | T_0)$	$P(w_1 | T_1)$	$P(w_1 | T_2)$	...	$P(w_1 | T_m)$
w_2	$P(w_2 | T_0)$	$P(w_2 | T_1)$	$P(w_2 | T_2)$	...	$P(w_2 | T_m)$
...
w_n	$P(w_n | T_0)$	$P(w_n | T_1)$	$P(w_n | T_2)$	...	$P(w_n | T_m)$



Machine Learning Model (cont'd)

Step 3 : Vectorize Headlines

Dictionary = { rockets, james, clippers, let, guard, russell, harden, westbrook, , 992 more words }

Article Headline = "Rockets Letting Russell Westbrook Be Himself"

=

rockets	james	clippers	let	guard	russell	harden	westbrook	..... 992 more
Yes	No	No	Yes	No	Yes	No	Yes	..... 992 more

= [1, 0, 0, 1, 0, 1, 0 , 1, ... 992 more]



Machine Learning Model - Bag of Words

Step 4 : Use Bayes' rule with a simplifying assumption to calculate probabilities

$$P(T_i | \text{Some Article}) = P(T_i | \text{Some Headline}) = P(T_i | w_0, w_1, w_2, w_3, \dots, w_n)$$

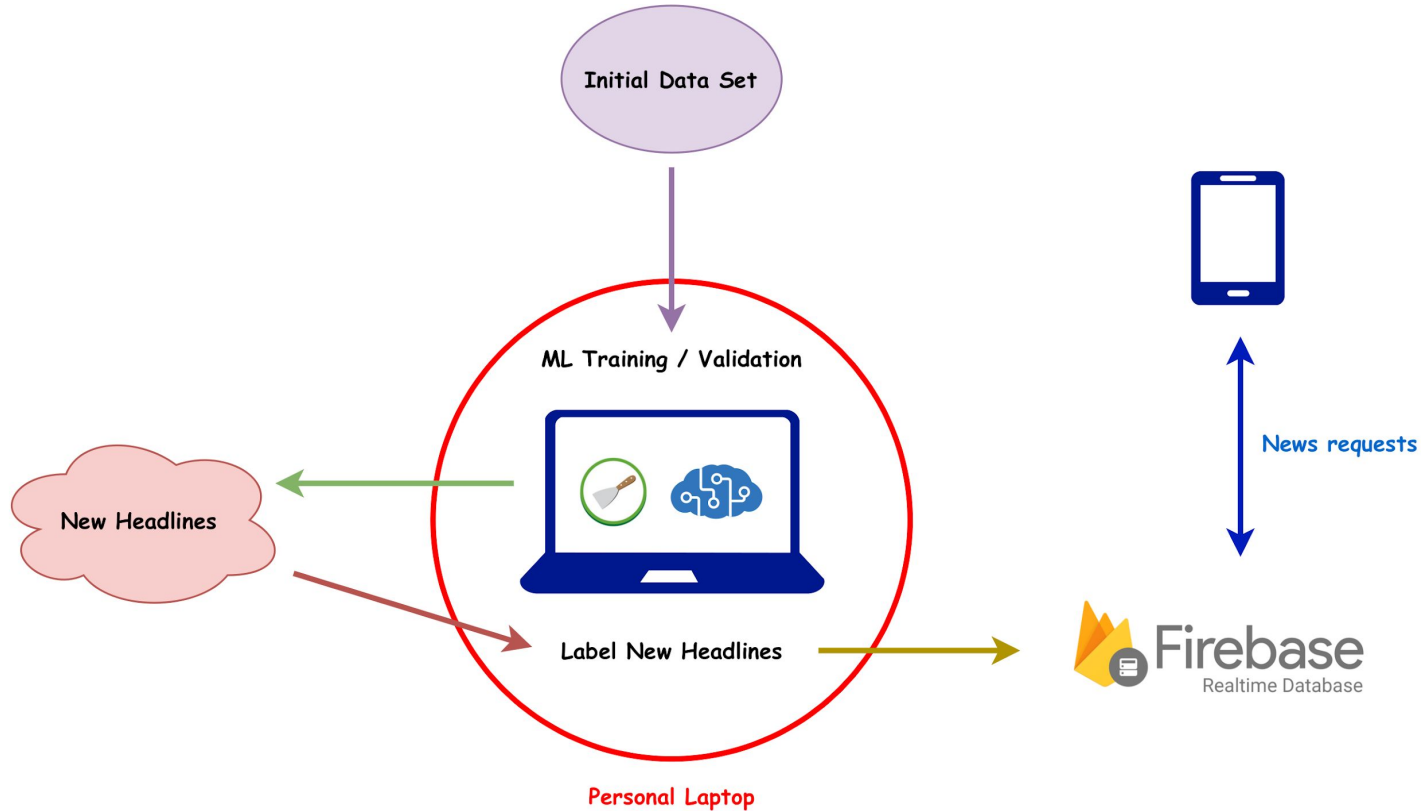
Bayes' Rule assuming conditional independence:

$$P(T_0 | \text{Some Article}) = \frac{P(w_0 | T_0) * P(w_1 | T_0) * P(w_2 | T_0) * \dots * P(w_n | T_0) * P(T_0)}{P(w_0, w_1, w_2, w_3, \dots, w_n)}$$

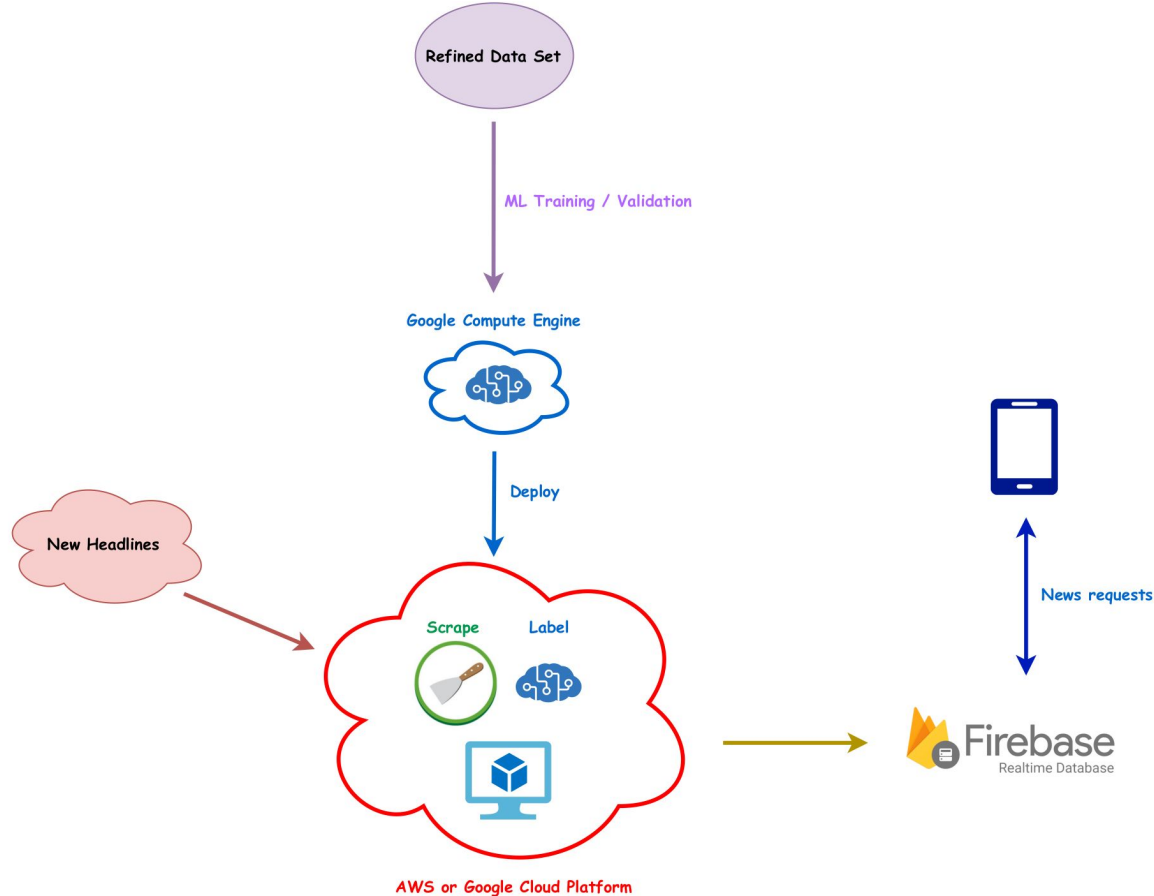
$$P(T_1 | \text{Some Article}) = \frac{P(w_0 | T_1) * P(w_1 | T_1) * P(w_2 | T_1) * \dots * P(w_n | T_1) * P(T_1)}{P(w_0, w_1, w_2, w_3, \dots, w_n)}$$

$$P(T_2 | \text{Some Article}) = \frac{P(w_0 | T_2) * P(w_1 | T_2) * P(w_2 | T_2) * \dots * P(w_n | T_2) * P(T_2)}{P(w_0, w_1, w_2, w_3, \dots, w_n)}$$


ML Model Deployment (1st Iteration)



ML Model Deployment (nth Iteration)



Risk Management

ID	Description	Mitigation Scheme	Severity Level	Date of Identification	Status
1	Incorrect Time Estimation	Have a person (Project Manager) take on the task of time management	High	3/9/2020	In Progress
2	Project Delays	Improve our time management (assign our tasks more specifically, ensure that we all understand the plan)	High	3/9/2020	In Progress
3	Conflicting Priorities	Have to discuss and come to an agreement about the design features and we plan to include and their implementation	High	3/9/2020	In Progress 
4	Tradeoff between maximum functionality and maximum performance	Try to have a good balance of both (avoid overdoing on the features but want to still have some	High	3/9/2020	In Progress
5	Lack of Communication	Have a person (Project Manager) consistently reach out to each team member	High	3/9/2020	In Progress

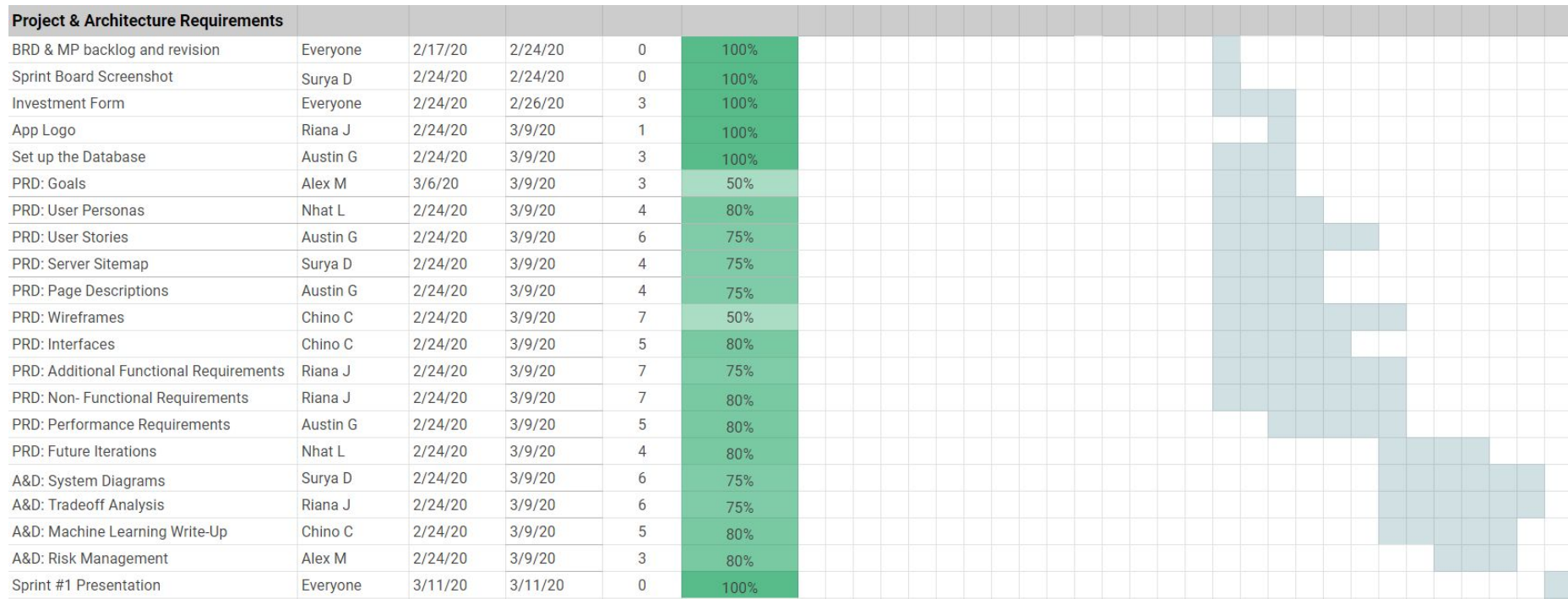


Performance Requirements

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Sprint Review - Gantt Chart

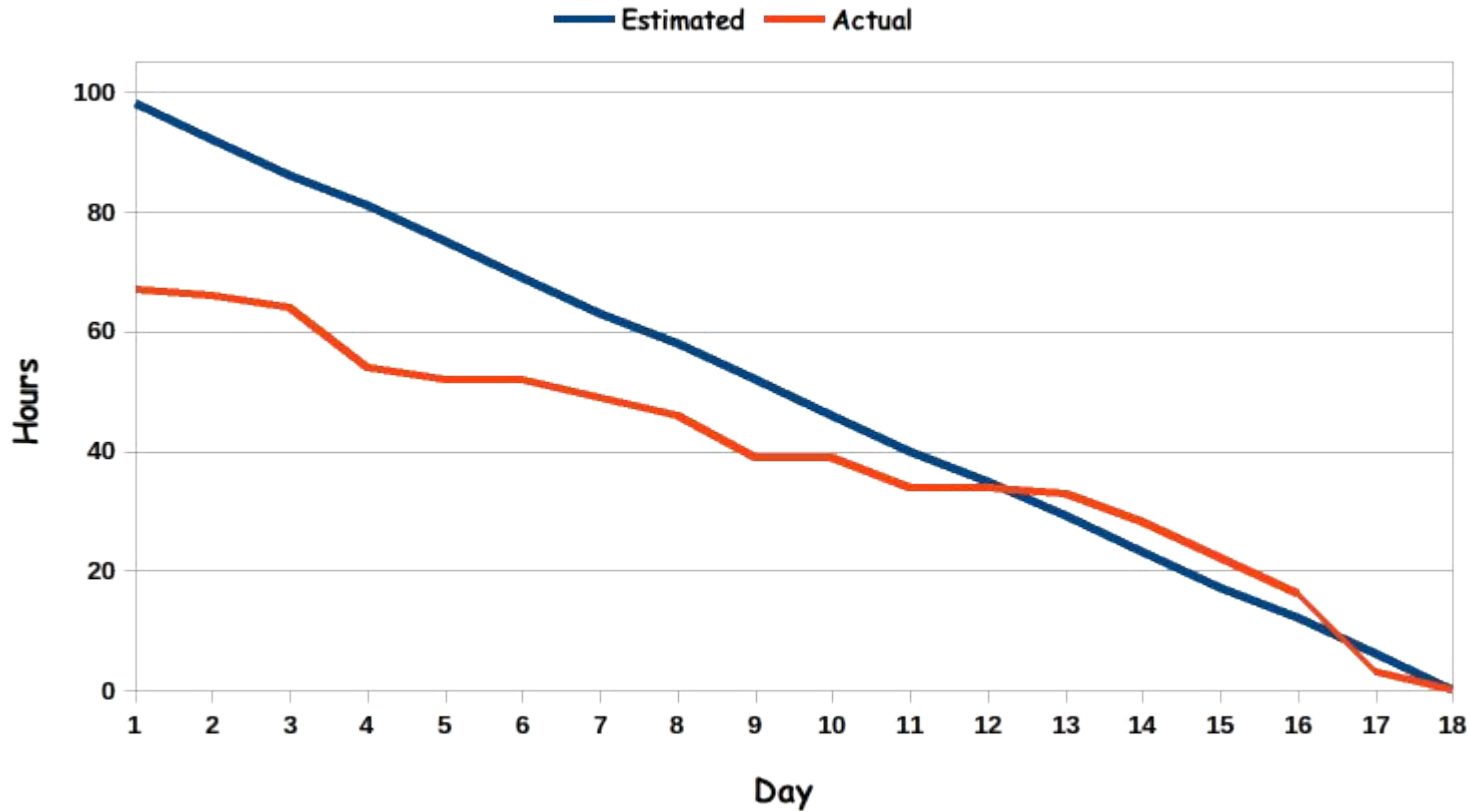


Sprint Review - Goals

- ✓ Product Requirements Document - 11 tasks
- ✓ Architecture and Design Document - 4 tasks
- ✓ Establish Database
- ✗ Establish User Login



Sprint Review - Burndown Chart



Est : 98

Act : 67

Avg : 4 hrs / day



Sprint Retrospective Conclusions

1. Meet outside lab / class time
2. Do better job of estimating time to complete tasks and distribute tasks more evenly (System / Architecture diagrams should have been split up into multiple tasks and assigned to multiple people)

