**Sprint Product Backlog Refinement meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 2 August 2017

**Venue:** WSS207

**Duration:** 14:15-16:00

**Attendance:** All members were present

**Agenda:**

* Creating the Scrum Backlog
* Date for Sprint 1 planning meeting
* Setting up Git-hub and daily scrum

The scrum backlog created is based on the following main components of the project listed in order of importance:

1. Optical Character Recognition(OCR)
2. Layout extraction(i.e. when dealing with x2  the segmentation should be able to recognize the x and 2 individually)
3. Latex generator
4. Recommender system
5. NLP(used to supply ranking of what the user searches for the most)
6. \*\*Market place

The following epics arose:

* Latex generator
* Market place

The latex generator is an epic as to be able to generate a latex document, after uploading an image segmentation and ocr have to happen and then a latex file is created. Hence, the user story “As a user, I can upload a photo and receive a set of latex notes” was made, with acceptance cases.

The following user stories were created with regards to the backlog:

* As a new user, I can sign up to use Noted.
* As an authenticated user, I can log in to use Noted.
* As an authenticated user, I can logout when I am done using Noted / to end my session.
* As an authenticated user, I can see each character of my notes in its right place

OCR was seen as most important as the entire project is based on recognizing handwritten text as accurately as possible. Hence, from research and knowledge this may take a while, especially to train a classifier that has a large dataset (i.e. alphabets, digits, and Greek and math symbols). This is followed by Layout extraction, which has to be able to extract each letter individual letter from any handwritten English notes with no super or subscripts which would be much easier. However, since we decided to include super and sub-scripts this maybe more challenging to do. The latex generator, which was seen to not be much work to implement a latex template in React but, this is an epic due to how the results from segmentation and OCR would be extracted to be displayed in the latex template. To implement NLP, we would use flags on mostly searched notes or authors by the user to be able to recommend notes which is much easier to implement compared to other methods. Lastly, the market place, which is only a matter of php scripts that finds and fetches from the file database the notes the user is searching for. The market place is a featured that was not initially part of the project but, was recommended by the lecture. The market place is where notes would be previewed, sold and searched by the user.

**Sprint 1 Planning meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 7 August 2017

**Venue:** MSL110

**Duration:** 14:15-17:00

**Attendance:** All members were present

**Agenda:**

* Setting upTaiga and putting up user stories for product and sprint backlog
* Linking Coveralls, Travis-CI and Git-Hub
* Sprint 1 user stories and associated tasks

We decided that OCR and layout extraction (Segmentation) would be worked on during this sprint but, was not for display for the Sprint1 review meeting. The IBM linux1 servers would be setup and instantiated to host our databases and computations. The web-application would be created (implementing the user stories for this sprint) and displayed for the Sprint1 review meeting. We decided that Git-hub would be setup so that we could not push to master but, only have pull requests.

The following user stories were assigned as the Sprint backlog:

* As a new user, I can sign up to use Noted.
* As an authenticated user, I can log in to use Noted.
* As an authenticated user, I can logout when I am done using Noted.
* As an authenticated user, I can see each character of my notes in its right place.

Issues:

* Most of us were not familiar with how to use coveralls and Travis-CI and hence, linking the two was challenging.

**Assigning of tasks:**

Create classifier – Mamello

Creating databases and UML of database - Ernest

Layout extraction (segmentation) - Tau

Setting up servers and linking Travis-CI with Coveralls – Meriam

Creating web-app - Mahlekenyane

**Sprint 1 Review meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 24 August 2017

**Venue:** UG – Terrance office

**Duration:** 13:30-14:00

**Attendance:** All members were present except for Tau

**Apologies:** Tau was unable to attend the meeting due to a funeral

**Agenda:**

* Checking documentation of daily scrum, backlog refinement, sprint planning
* Checking creation of project on taiga, Git-hub, coveralls, Travis-CI
* Checking integration of Git-hub, coveralls and Travis-CI
* Outline of project on Git-hub wiki
* Commits to Git-hub by all team members
* Checking of Web-application, sign up, login and sign out

All the above were checked by the lecturer and the only critique was that our user stories on Taiga didn’t have acceptance cases.

**Sprint 1 Retrospective meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 30 August 2017

**Venue:** MSL110

**Duration:** 14:15-15:30

**Attendance:** All members were present

**Agenda:**

* Reflection of previous sprint review meeting
* Reflection of sprint

All members were not anxious or feeling otherwise. We were all happy with the results of the sprint review meeting and acceptance cases were made for each user story.

**Sprint 2 Planning meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 01 September 2017

**Venue:** MSL laptop area

**Duration:** 10:00 am – 12:00 am

**Attendance:** All members were present

**Agenda:**

* Setting up unit tests for segmentation and OCR
* Sprint 2 user stories and tasks

We decided that the recommender system would be worked on during this sprint but, was not for display for the Sprint 2 review meeting.

The following user stories were assigned as the Sprint 2 backlog:

* As a new user, I can sign up to use Noted
* As an authenticated user, I can see each character of my notes in its right place.
* As an authenticated user, I can logout when I am done using Noted.
* As a user, I can upload a photo and receive a set of latex notes.

**Assigning of tasks:**

* Classifier – Ernest and Mamello
* Layout extraction (segmentation) - Tau
* Unit tests and creating release for the sprint – Meriam
* Create upload platform on web-app- Mahlekenyane

**Sprint 2 Review meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 21 September 2017

**Duration:** 12:45 pm - 1:30 pm

**Venue:** UG Terrance office

**Attendance:** All members were present

**Agenda:**

* Checking documentation of daily scrum, backlog refinement, sprint planning, sprint 1 review
* Checking user stories on Taiga for sprint 1 and 2
* Checking coverage on Coveralls
* Checking integration of Git-hub, coveralls and Travis-CI
* Seeing coverage of unit tests
* High-level outline of project on Git-hub wiki (component, deployment, use case and sequence diagram)
* Commits to Git-hub by all team members
* Checking prototypes for this sprint
* Checking for sprint release on Git-Hub

All the above were checked by the lecturer and the critiques were:

* Incorrect structure and terminology of some user stories
* Reusing user stories due to an additional task/ feature being added
* No sequence diagrams of system

Issues:

* The IBM server with the web-app stopped working before presenting the work done, hence a local server was used.

**Sprint 2 Retrospective meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 22 September 2017

**Venue:** MSL laptop area

Duration: 10:00 am – 12:00 am

**Attendance:** All members were present

**Agenda:**

* Reflection of previous sprint review meeting
* Reflection of sprint
* Any ideas or strategies to simplify the work

All members were not anxious or feeling otherwise. We were all happy with the results of the sprint review meeting. All critiques from the sprint review were acknowledge and necessary changes were made with regards to user stories, sequence diagram. We also decide to re-look at our at all user stories, acceptance cases and epics.

The following user stories were created with regards to the new product backlog:

* As a new user, I can register to use Noted.
* As a registered user, I can log in to use the Noted.
* As a logged-in user, I can logout when I am done using Noted.
* As a user, I can upload a photo and receive a set of latex notes.
* As an authenticated user, I can view and edit my latex notes to add improvements and corrections.
* As an author, I can view my home page to see all my notes.
* As an author, I can see and edit what Noted has recognized as individual characters to improve the generated latex notes.
* As an authenticated user, I can upload an image of my notes that I want to be turned into latex notes.
* As an author, I can view the progress of my notes being generated to see how far I am to receiving my latex notes
* As a general user, I enjoyed using Noted.
* As a user, I can browser the market place to purchase or view other authors notes.

**Sprint 3 Planning meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 27 September 2017

**Venue:** MSL laptop area

**Attendance:** All members were present

**Agenda:**

* Sprint 3 user stories and tasks

For this sprint we decided that instead of only making corrections of the misclassified letters in the latex document, we would rather have the user make corrections on the “Melabor”. As an author, I can view the progress of my notes being generated to see how far I am to receiving my latex notes

The following user stories were assigned as the Sprint 3 backlog:

* As an authenticated user, I can view and edit my latex notes to add improvements and corrections.
* As an author, I can view my home page to see all my notes.
* As an author, I can see and edit what Noted has recognized as individual characters to improve the generated latex notes.
* As an authenticated user, I can upload an image of my notes that I want to be turned into latex notes.
* As an author, I can view the progress of my notes being generated to see how far I am to receiving my latex notes

Issues:

* All our databases on the servers disappeared

**Assigning of tasks:**

* Linking segmentation and OCR - Mamello
* Creating pyOCR and unit tests - Tau
* Creating a prototype of segmentation and OCR (the “Melabor”) – Meriam
* Linking the Melabor with web-app after uploading image - Mahlekenyane

**Sprint 3 Review meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 16 October 2017

**Venue:** UG - Terrance office

**Duration:** 2:40 pm - 3:05 pm

**Attendance:** All members were present except Mahlekenyane

**Apologies:** Mahlekenyane had an interview to attend to in Pretoria

**Agenda:**

* Checking documentation of daily scrum, backlog refinement, sprint planning, sprint 1 review
* Checking user stories on Taiga for sprint 1 and 2
* Checking coverage on Coveralls
* Checking integration of Git-hub, coveralls and Travis-CI
* Seeing coverage of unit tests
* High-level outline of project on Git-hub wiki (component, deployment, use case and sequence diagram)
* Commits to Git-hub by all team members
* Checking prototypes for this sprint
* Checking for sprint release on Git-Hub

All the above were checked by the lecturer and the critiques were:

* No proof of documentation for sprints retrospective and planning meeting
* Our sequence diagram of system was full overview of the system instead of each portion of the system.
* No release for this sprint

Suggestions:

* We shouldn’t train the classifier any further.
* Focus on merging each separate process of the system

**Sprint 3 Retrospective meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 18 October 2017

**Venue:** MSL laptop area

**Duration:** 14:00 pm – 15:30 pm

**Attendance:** All members were present

**Agenda:**

* Reflection of previous sprint review meeting
* Reflection of sprint
* Any ideas or strategies to simplify the work

All members were not anxious or feeling otherwise. We were all happy with the results of the sprint review meeting. All critiques from the sprint review were acknowledge and necessary changes were made.

With regards to the implementation of the Melabor we would make the process of getting the latex version of the notes more accurate by getting the user more involved. This done by having an editable text boxes that shows on the “Melabor” what the classifier has classified each letter as, so that the user can change the characters prior to the latex file being generated.

All members should clean up their respective branches on Git-Hub to have an accurate test coverage on Coveralls

**Sprint 4 Planning meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** October 2017

**Venue:** MSL laptop area

**Attendance:** All members were present

**Agenda:**

* Sprint 3 user stories and tasks

**Assigning of tasks:**

* Documentation of all sprint planning, retrospective and scrum meetings - Mamello
* Fixing PyOCR and unit tests, registering for Google servers - Tau
* Implementation of suggestion on the “Melabor” from the retrospective meeting, installation of dependencies on Google server, latex generation with unit tests – Meriam
* Insuring things work on the new Google servers – Mahlekenyane
* Setting up the database on the Google servers and creating the sequence diagrams suggested in sprint 3 review meeting - Ernest

**Sprint 4 Review meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:** 30 October 2017

**Venue:** UG - Terrance office

**Duration:**

**Attendance:** All members were present

**Agenda:**

**Sprint 4 Retrospective meeting:**

**Scrum master:** Mamello Maseko

**Scrum Development team:** Mahlekenyane Tseole, Meriam Elabor, Ernest Phoshoko

**Product Owner:** Tau Merand

**Date:**

**Venue:**

**Duration:**

**Attendance:** All members were present

**Agenda:**

**Daily Scrum Meeting:**

Initially the scrum meetings took place on Whatsapp, however for the sake of simplicity and documentation in this report we give summary or an overall of our scrum meetings:

| **Week date** | **Tau Merand** | **Meriam** | **Mahlekenyane** | **Mamello** | **Ernest** |
| --- | --- | --- | --- | --- | --- |
| 7 - 13 August | Research on language to use for segmentation | Researched on Coveralls and Travis  Created server on IBM Linux One | Started creating a basic design layout of web-app on React | Organizing Sprint planning meeting  Created Git-Hub, taiga and coveralls account | Created structural view of database |
| 14 – 20 August | Met with Dr Klint and Dr Richard Klein on implementation of segmentation | Linked Travis with Coveralls | Created sign-up and log-in page | Met with Dr Klint and Dr Richard Klein on implementation of OCR | Implemented database on the Linux one server |
| 21- 27 August | Research on methods to use for segmentation | Research on creating and created unit tests for segmentation | Working on sign-out | Research on language to use for OCR | Made changes to database structure with respects new database setup |
| 28 August – 03 September | Implementation of suggestions from Dr Clint and Dr Richard | Server management | Working on email verification and registration | Organizing Sprint planning meeting  Creating classifier | Creating classifier |
| 04 - 10 September | Created Beta classifier | Created basic latex generator | Setting up latex editor | Getting more handwritten characters to use for training | Creating classifier |
| 11- 17 September | Implementation segmentation with sklearn | Creating the “Melabor” | Setting up platform to upload images on web-app | Training classifier | Training classifier |
| 18 - 24 September | Implementing segmentation with keras and tensorflow | Working on the “Melabor” | Created PDF viewer and notebook interface | Created class diagram | Creating component, deployment and use case diagrams |
| 25 September – 01 October | Unit tests for segmentation and OCR | Integrated “Melabor” on the web-app  Fixing user stories on taiga | Created statistics page, ratings, homepage, | Organizing Sprint planning meeting  Fixing user stories on taiga | Creating API's for the servers |
| 02 - 08 October | Creating PyOcr | Installed all dependencies on the Google server | Created uploading process bar and linked it to the users profile | Creating prototype to view link between segmentation and ocr via json file | Creating sequence diagram  Creating API's for the servers |
| 09 - 15 October | Opened account on on Google to use their server | Add ability to edit labels on “Melabor” | Creating the market place platform(store) | Linking segmentation and OCR via json file | Installed database on the Google server |
| 16 - 22 October | Fixing PyOCR and merging with the business logic | Improved on latex generator, allowed for mathematical symbols and formatting | Merging the business logic with PyOCR through spawning | Improved linking segmentation and OCR via json file | Migrated previous server structure onto Google server |
| 23 - 29 October | Restructuring PyOcr to fit new structure of web-app | Unit tests for latex generator  Merging branches  Assisted in sql with regards to ratings | Creating the market place platform | Documentation on all sprint meetings | Restructured diagrams |