**Biometric Project Specifications**

Overall objective: Improve registration process for Muzima and OpenMRS to improve Kenyan names identification

**Task 1: To provide client side validation of form registration systems**

* 1. Port preprocess.pl data into a javascript file that can be imported into any application (demographic form should have error catching and an error message if fails)
  2. Append generic validation methods to muzima.js for use by users creating custom registration forms
  3. Provide custom js creation based on existing demographic details on the deployed openmrs instance

*References:*

1. Generic implementation of the check digit example - <https://github.com/muzima/muzima-form/blob/master/js/muzima.js#L141>
2. Preprocessor file -- <https://github.com/judywawira/biometrics/blob/master/preprocess.pl>

**Task 2: To collect and append biometric data into the standard demographic form**

* 1. Collect biometric data and append to demographics form for muzima .Must pass the ‘good quality check on the device’ if not good quality ask the user to recapture the biometric unit. If successful append to the registration form
  2. Write a generic JS script to incorporate the muzima app for ease of inclusion into custom made forms (implemented in task 2.1)
  3. Create a biometric data capture widget for openmrs that can be added to custom registration forms

*References:*

1. Example demographic registration form - <https://github.com/muzima/documentation.wiki.git>

**Task 3: Preparation of demographic data to be submitted**

* This task handles collection of the registration data into the muzima platform.
* Specifically, the task deals with saving and testing of biometric data appending as a person attribute (to form a person attribute object that is sent to the server )

*References*

* On upload, the Registration Form Processor deals with the data sent using the Registration Form Processor <https://github.com/muzima/documentation/wiki/Form-Processing-Mechanism>

**Task 4: Server side processing of registration data**

- Implement server side processing of the registration process

4.1 : Implement server side processing for the submitted registration data

- Preprocess registration fields

- Generate blocking fields – saved as an index in a new table

- If match found in any block , and with threshold of > 95%, then append the data to the existing patient and return the actual uuid to the temporary patient creation in the encounter processor

- If match not found and not in grey zone ::: then create a new patient -- return new uuid to encounter process

- If match not found and in grey Zone, flag names for review. Create new patient after review. Should have an admin setting for review or no review

- Depends a lot on the patient matching module here:: <https://wiki.openmrs.org/display/docs/Patient+Matching+Module>

How does blocking work - There are two levels: one time during setup, and continuous when new data is appended to maintain the indexes.

First time (should be done after pre process)

* At present using R, we calculate entropy based on all demographic fields

library(entropy)

install.packages("entropy")

source("is\_good\_match\_field.R")

hct.fm<-field\_metrics(hct)

Outpur are Nysiis transformation of names and derived fields. should display the results of the entropy and the Good Match fields to the end user

Step 2: Derive blocking units and build an index saved in a table in OpenMRS - should be displayed to the user. Should create a scheduled task(that should have a property) to schedule new batch updates to the Index.

Step 3: Append the blocks to the matching strategy

There are multiple ways to append the matching – should send the data into the PM module already in the system and a rules based algorithm

**Task 5: Mobile phone search processing**

- At present, this works by searching the name and uuid. Include the biometric data into the basic search.

- Provide a downloadable index of the blocks from processed blocks to search against a downloaded cohort (test feature for speed of search and improved accuracy of search for patients)