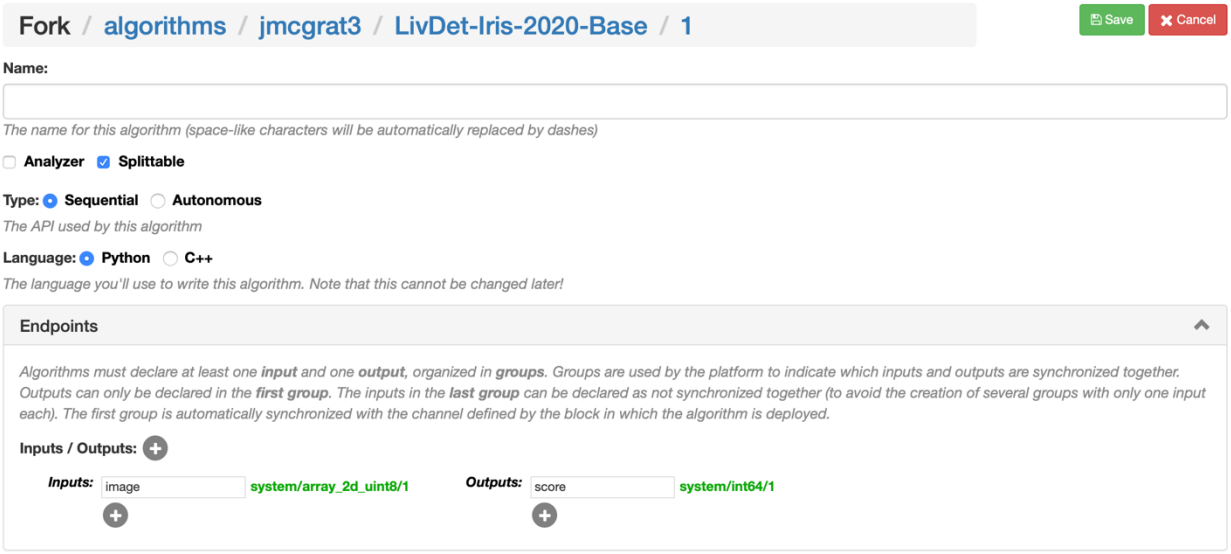
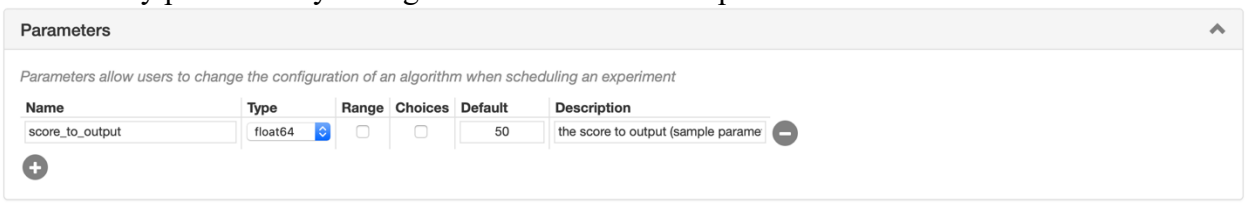
ADDING ALGORITHMS TO BEAT

Setup:

1. Log into the BEAT platform (https://www.beat-eu.org/platform/)
2. Go to User Resources > Algorithms (see https://www.idiap.ch/software/beat/docs/beat/docs/master/beat/beat.web/doc/user/algorithms/guide.html for more information)
3. Find the algorithm "jmcgrat3/LivDet-Iris-2020-Base/1" and click the purple fork icon to create a new algorithm from this algorithm. This will give you a base algorithm to work with.



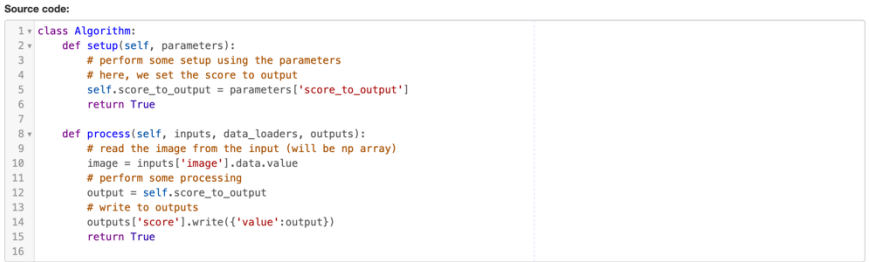
4. Add any parameters your algorithm will need in the parameters section



Development:

Python

1. The editor window should already be set up with the necessary code.



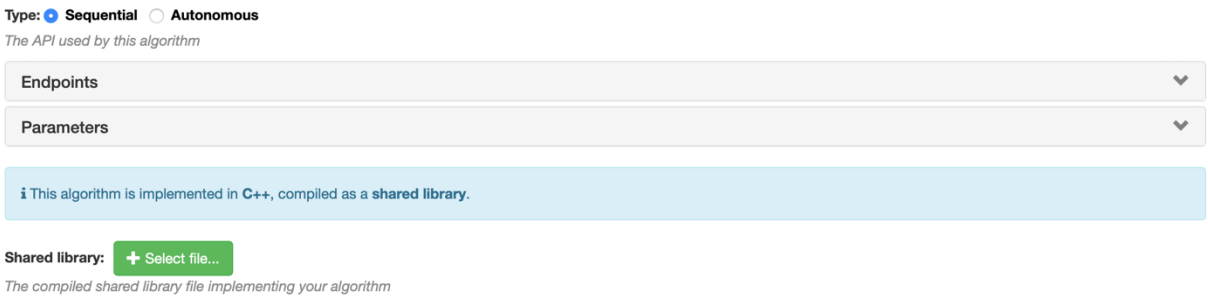
2. Import an additional modules your algorithm will need (make sure they are included in the environment - http://www.iris2020.livdet.org/wp-content/uploads/2020/06/environment_beat.txt)
3. Any parameters your algorithm needs (that you added in setup step 4 above) can be loaded in the *setup* portion of the algorithm. See the examples (https://www.idiap.ch/software/beat/docs/beat/docs/master/beat/beat.web/doc/user/algorithms/guide.html) for more details
4. The inputs and outputs of the *process* portion of the algorithm should remain the same.
5. If your algorithm relies on external models, they will need to be converted to a text format and added to the *Algorithm* class

```
model = b'\x80\x03csklearn.discriminant_analysis\nLinearDiscriminantAnalysis\nq\x00)\x81q\x01}q\x02(X\

lda = pickle.loads(model)
lda
```

C++

1. Follow the instructions for setting up the environment to develop in C++ (https://www.idiap.ch/software/beat/docs/beat/docs/master/beat/beat.web/doc/user/algorithms/guide.html#implementing-an-algorithm-in-c)
    a. The docker image can be found at https://hub.docker.com/r/beatenv/beat.env.cxxdev
2. Change the algorithm you created in setup to be a C++ algorithm and save it.
3. Continue following the instructions from step 1 (pull your algorithm into the environment and run generate_cxx.py to create the necessary files)
4. Follow the examples to retrieve your parameters and inputs and to set your outputs
    a. https://www.idiap.ch/software/beat/docs/beat/docs/master/algorithms.html#preparation-of-an-algorithm
    b. Boost data types are used in C++
5. Make your .so file
    a. Make sure to update the cmake file to correctly link any dependencies you may need
6. Upload the file to your algorithm on the BEAT website



If you have issues when implementing your algorithm for BEAT, please ask us at jmcgrat3@alumni.nd.edu