Hello,

Good day,

How to use the Deep Deterministic Learning(DDL) Model:

**Step 1:** Please Extract zip file of DDL repository file and view the DDL.m file ( The model of DDL is a systematic model that follows the few stesp)

**Step2:** Explore the public dataset(MIT-BIH) which have two nature of cardiac malfunctions namely; atrial fib ration(afib\_ab) and ST-T changes ( ST-T\_db) . One normal ECG signal that is normal sinus rhythm(nsr-DB)

**Step3:** First operational work; execute the proposed effective R-peaks detection algorithm (ERpeaks.m) and get the time domain features through this algorithm along with efficiency gages of R-peaks detection algorithm( Se, ACC, Error ratio, P+).

**Step4:** In this operational phase, set the target class and input class on the bases of efficiency gages of R-peaks detection algorithm( Se, ACC, Error ratio, P+). After that, the extracted features streams of all types of ECG signals(MIT-BIH dataset : afib, ST-T changes and nsr) are self-recognized features patterns through customized ANN .

**Step5**: In this phase, same process of Step 4 is replicated on other dataset . In our research work, we used the UMMC dataset after the ethical approval. The UMMC dataset is not available in above DDL repository file due to ethical clearance issue( its not a public dataset). So, for last DDL operation ( data fusion stage), you can use another public dataset.

**Step6:** Finally, both dataset are fused and set the target class and input class on the bases of stage 2 findings like most efficient results in each dataset set as a target class and least efficient results in each dataset set as a input class (stage3 of DDL). After getting the target and input class , the features streams are again placed in same customized ANN for getting the recognized and unrecognized classes.

Note: Please review the attached article of DDL for further observations and if you still have any query regarding DDL please feel free to quote me at: [uzair.iqbal@siswa.um.edu.my](mailto:uzair.iqbal@siswa.um.edu.my);

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