A Framework for Benchmarking Link Quality Estimators

Integrating a new LQE to DataAnlApp application

DataAnlApp

|__ **Gui files**

| |__ StartInterface.fig
| |__ StartInterface.m
| |__ FirstInterface.fig
| |__ FirstInterface.m
| |__ SecondInterface.fig
| |__ SecondInterface.m
| |__ ThirdInterface.fig
| |__ ThirdInterface.m
| |__ waitframe.fig
| |__ waitframe.m

|__ **Mysql connection files**

| |__ mysql.mexglx (for linux mysql connection)
| |__ mysql.dll (for windows mysql connection)
| |__ mysql.m
| |__ files picked from this URL: http://www.mmf.utoronto.ca/resrchres/mysql/

|__ **Distance file**

| |__ distnc.m (generated automatically from code)

|__ **Link Quality Characterization files**

| |__ computeLQC.m (compute required vector to plot PRR-RSSI-LQI and
| SNR related figures)
| |__ prr_f_distance.m
| |__ rssi_f_distance.m
| |__ lqi_f_distance.m
| |__ snr_f_distance.m
| |__ prr_f_rssi.m
| |__ prr_f_lqi.m
| |__ prr_f_snr.m

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|       |__ asymmetrylvl.m
|       |__ lqevtime.m
|       |__ matrixnodedistance.m (used by computeLQC.m and asymmetrylvl.m)
|          With this function we can get the list of node having the same
|          distance to the receiver.
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|__ Link Quality Estimation files

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        |__ selectdata.m (queries receiver and sender collected
        |   information and store them in two files: receiver.txt and
        |    sender.txt)
        |__ compute_metrics.m (contains the implementation of each LQE)
        |__ curve.m (prepare the required vectors to plot statistical
        |   properties of different LQEs)
        |__ tempobehavior.m (plots the temporal behavior of each LQEs)
        |__ stabilitycv.m (gives information about the stability of each
        | LQEs)
        |__ emp_cdf.m (plots cumulative distribution function of each
        | LQEs)
        |__ (1)scatterplot.m (2)createscatter.m (3) createscatterAll.m
        |__ extract.m (to extract line limits from used files)
        |__ normetx.m (to normalize ETX values between 1 and 100)
```

New LQE integration:

Files to change (Follow the given order)

- compute_metrics.m
- curve.m
- tempobehavior.m
- stabilitycv.m
- emp_cdf.m
- (1)scatterplot.m (2)createscatter.m (3) createscatterAll.m

Some hints

By clicking on **"Compute LQEs"** button, we invoke

(1) selectdata
(2) compute_metrics
(3) curve

-- **selectdata:** in this file we query the database to collect some receiver and sender side information and then we store them into two separated files (receiver.txt and sender.txt).

-- **compute_metrics**: in this file, we classify Link Quality Estimators (LQEs) to three categories:

- Receiver side Estimators: computed based on received information like seq number, rssi, lqi, noise
- Sender side Estimators: computed based on sent information like retransmission count
- Hybrid side Estimators: in which we combine sender and receiver side information (example: 4Bit estimator)

Estimation Values of LQEs belonging to the first category will be stored in a file named: receiver_lqes.txt
Estimation Values of LQEs belonging to the second category will be stored in a file named: sender_lqes.txt
Estimation Values of LQEs belonging to the third category will be stored in a file named: hybrid_LQEname.txt (example: hybrid_4Bit.txt)
In compute_metrics.m file, you will be invited to:

- define the tuning parameters of his LQE
- implement his LQE
- insert estimation values (at each estimation window: named w) in the appropriate file

You will find some directive utterances to ease your LQE integration
-- **curve.m**: In this file, we prepare needed vectors to generate: temporal behavior, stability, scatter and CDF curves You will find some directive utterances to ease the taking into account of your integrated LQE.