LOSeR: Linked Offset Storage/Retrieval

An Experimental Data Calibration Database System

Mark D. Hare
markhare@buffalo.edu

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1 Purpose

The Linked Offset Storage/Retrieval system (affectionately referred to as "LOSeR ") is a data acquisition workflow with an associated software implementation. LOSeR is a database system that allows experimental calibration data to be collected, stored, and linked to associated experimental trials. This allows the researcher to avoid the tedium of recalibration and the chaos of calibration storage and documentation. The LOSeR process integrates easily with existing data acquisition workflows and reduces the danger of lost or misinterpreted experimental data.

2 Architecture

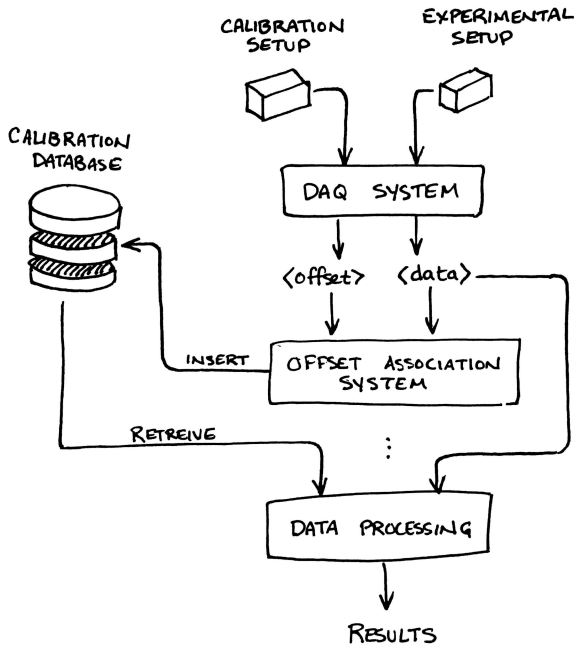

Figure 1: LOSeR System Architecture Overview

Steps in LOSeR workflow (see figure 1 for diagram of system architecture):

1. Set up experiment in zeroed or calibration state and acquire calibration data
2. For each test in the group of test for which this calibration is valid:
   (a) Perform test and acquire data
   (b) Associate calibration with test using Offset Association System
3. Process data for each test as necessary, retrieving linked calibrations from database

3 Implementation

The working implementation of LOSeR will use a data acquisition system based on National Instruments' LabVIEW, association and processing scripts written in MATLAB, and an SQLite database system for offset storage. The MATLAB/SQLite connector is a MATLAB extension written in C by Robin Martinjak, available at `https://github.com/rmartinjak/mex-sqlite3` under an MIT license.