Abstract:
This paper presents two ongoing efforts of the Pacific Earthquake Engineering Research (PEER) center in the area of structural health monitoring. The first is data-driven damage assessment, which focuses on using data from instrumented buildings to compute the values of damage features. Using machine learning algorithms, these damage features are used for rapid identification of the level and location of damage after earthquakes. One of the damage features identified to be highly efficient is the cumulative absolute velocity. The second is vision-based automated damage identification and assessment from images. Deep learning techniques are used to conduct several identification tasks from images, examples of which are the structural component type, and level and type of damage. The objective is to use crowdsourcing, allowing the general public to take photographs of damage and upload them to a server where damage is automatically identified using deep learning algorithms. The paper also introduces PEER.s effort and preliminary results in engaging the engineering and computer science communities in such developments through the PEER Hub Image-Net (F-Net) challenge.