

## **SSHM and Computer Vision**

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The seismic response of a structure during an earthquake is a short nonrepetitive signal from a nonlinear system even if damage has not occurred. The seismic response is typically obtained using a very limited number of sensors like accelerometers or seismometers but also from displacement or strain using potentiometers, LVDT and recently video cameras. In Seismic Structural Health Monitoring (SSHM) response time series and its derivatives like interstory drifts, maximum accelerations, CAV, Arias Intensity among others are combined with modal identification parameters (mainly period and mode shape) to estimate the possible level of damage. Video cameras are widely used now for traffic control, security reasons and general surveillance. Videos obtained from this extensive network can be used to estimate the response of structures. Some excellent results have been obtained in laboratory environments where response data from sensors is compared with the estimations using standard computer vision techniques. I will present basic concepts of SSHM and computer vision and some successful validations in laboratory environments and field tests using standard fixed cameras as well as drone capture videos. The limitations of technologies will be presented along with the key challenges that are still present. Nevertheless, the simplicity of the computer vision technology and its robustness is confirmed as a key partner in SSHM.