

Justin G. Chen

CONTACT INFORMATION	33 Hayward Avenue Lexington, MA 02421 website: http://people.csail.mit.edu/ju21743/	phone: (626) 235-2666 e-mail: ju21743@mit.edu e-mail: justgchen@gmail.com
RESEARCH INTERESTS	Novel sensor systems, vision-based measurement systems, vibration analysis, laser vibrometry, computer vision, machine learning, time series analysis, non-destructive testing, structural health monitoring.	
EDUCATION	Massachusetts Institute of Technology , Cambridge, MA <i>Ph.D, Civil and Environmental Engineering, Structures and Materials</i> June 2016 <ul style="list-style-type: none">• Thesis: Video Camera-based Vibration Measurement of Infrastructure• Advisor: Oral Buyukozturk• Adapted commodity cameras and computer vision algorithms (Motion Magnification) to visualize and measure mode shapes and displacements of structures and objects• Characterized and compared the methodology to traditional sensors, in the laboratory as well as on real structures, including a bridge in Portsmouth, NH• Worked with machine learning and damage detection algorithms for structural monitoring <i>Master of Science, Civil and Environmental Engineering</i> February 2013 <ul style="list-style-type: none">• Thesis: Detection of Defects in FRP-Reinforced Concrete with the Acoustic-Laser Vibrometry Method• Advisors: Oral Buyukozturk and Robert Haupt• Worked with an acoustic-laser vibrometry system to remotely detect defects in FRP-reinforced concrete• Performed experimental studies on variations of the acoustic excitation, defects, and measurements to quantify the effects on signal amplitude, noise floor, and the receiver operating characteristic curve California Institute of Technology , Pasadena, CA <i>Bachelor of Science, Physics</i> December 2008 <i>Selected Coursework:</i> Competitive Business Strategy, Options, Market Microstructure	
PROFESSIONAL EXPERIENCE	Massachusetts Institute of Technology , Cambridge, MA <i>Post-doctoral Associate, Laboratory for Infrastructure Science and Sustainability</i> June 2016 - Present MIT Lincoln Laboratory , Lexington, MA <i>Assistant Staff, Active Optical Systems, Group 106</i> May 2009 – August 2010 <ul style="list-style-type: none">• Assisted in the development of a laser vibrometry system on a moving ground platform• Performed vibration analysis in MATLAB and worked with fiber-optics and accelerometer data acquisition Neutron EDM Group, Caltech , Pasadena, CA <i>Research Assistant and Summer Undergraduate Researcher</i> January 2008 - April 2009 <ul style="list-style-type: none">• Mapped the magnetic field of a one-half scale modified 30-turn Cos θ coil for field uniformity• Made modifications of the coil and ferromagnetic shield assembly in support of the SNS nEDM experiment	
SKILLS	Software: MATLAB, LabVIEW, Python, Abaqus, ADINA Experimental: Data acquisition, laser vibrometry, high-speed cameras, accelerometers, performance driving	
SELECTED PUBLICATIONS	Chen, J.G. , N. Wadhwa, Y.-J. Cha, F. Durand, W.T. Freeman, O. Buyukozturk, “Modal identification of simple structures with high-speed video using motion magnification,” <i>Journal of Sound and Vibration</i> , Vol. 345, pp. 58-71, 2015. Davis, A., J. G. Chen , and F. Durand. “Image-Space Modal Bases for Plausible Manipulation of Objects in Video,” <i>ACM Transaction on Graphics (TOG)</i> , Vol. 34, no. 6, p. 239. Davis, A., K.L. Bouman, J.G. Chen , M. Rubinstein, F. Durand, and W.T. Freeman, “Visual Vibrometry: Estimating Material Properties from Small Motions in Video,” <i>Proc. IEEE Conf. on CVPR</i> , pp. 5335, 2015. Chen, J.G. , R.W. Haupt, and O. Buyukozturk, “Operational and defect parameters concerning the acoustic-laser vibrometry method for FRP-reinforced concrete,” <i>NDT & E International</i> , Vol. 71, pp. 43-53, 2015.	
AWARDS	Shell - MIT Energy Fellow, 2012 - 2013 American Society for Nondestructive Testing Fellowship Award, 2011 Harvey Schoettler Fellowship, 2010 - 2011	
INTERESTS	Autocross, skiing, poi fire spinning, gymnastics, longboarding, cello, piano	