CURRICULUM VITAE

IVAN BARTOLI, PhD

Associate Professor

Civil Engineering Program Head

Department of Civil, Architectural and Environmental Engineering, Drexel University

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EDUCATION

- PhD Structural Engineering, November 2007, University of California, San Diego, CA
  Dissertation: Structural Health Monitoring by Ultrasonic Guided Waves, Faculty advisor Francesco Lanza di Scalea.

- Doctorate of Research (Dottorato di Ricerca), Mechanics of Structures, 2003-2006, University of Bologna UNIBO, Bologna (Italy)
  Dissertation: Numerical prediction of the dynamic behavior of structural components and estimation of mechanical properties, Faculty advisor E. Viola.

- M.S., GPA-3.92, Structural Engineering, 2005, UCSD

- Laurea, Civil Engineering (specialization in Structural Engineering), 100/100 magna cum laude, 2001, University of Bologna, UNIBO, Italy Thesis: Identification of elastic constants for fiber reinforced composite materials. Advisor: E. Viola, Chair of the Doctorate of Research in Mechanics of Structures, University of Bologna, Italy

ACADEMIC AND PROFESSIONAL INTERESTS

- Identification of mechanical properties of mechanical and structural systems
- Finite element modeling for transient stress wave propagation
- Nondestructive testing/evaluation and structural health monitoring
- Signal processing for real-time prognosis of structures
- Implementation of embedded sensor network for health monitoring of civil, mechanical and aerospace structures.
- Inspection of civil and aerospace infrastructures

PROFESSIONAL AND TEACHING EXPERIENCE

- Associate Professor, Dept. of Civil, Architectural and Environmental Engineering, Drexel University, Philadelphia, PA (September 2016-Now).
- Consultant, Infratek Solutions (October 2020-Now)
- Assistant Professor, Dept. of Civil, Architectural and Environmental Engineering, Drexel University, Philadelphia, PA (September 2010-August 2016).
- Consultant, Avanti Tech. LLC (June 2009-Sept 2010)
- Assistant Project Scientist Step IV, Dept. of Structural Engineering, University of California San Diego.
- Ph.D., Dept. of Structural Engineering, University of California San Diego, (2004–Nov 2007).
- Master of Science, UCSD (2004–2005).
- Teaching Assistant, Department of Structural Engineering, UCSD: taught NDE and Structural Health Monitoring (Spring 2006).
- Doctorate of Research in "Mechanics of Structures" (Italian Ph.D.), Department of Structural Engineering, University of Bologna (2003–2005).

- Teaching Assistant, Department of Structural Engineering, University of Bologna: taught Solid Mechanics, Structural Dynamics (2003).

- Part time architectural and structural consultant engineer, construction yard, Rimini, Italy (2000–2002).

- Private tutoring (Physics, Calculus, Geometry, Strength of Materials) at the undergraduate level (2000–2002)

HONORS AND AWARDS

- 2018 Fellowship Research Award of the American Society for Nondestructive Testing for graduate research on "Identification of Water Pipe Material Based on Stress Wave Propagation", student Peyman Aminpour Mohammadabadi.

- Pennsylvania Concrete Masonry Association Award to participate at the 11th North American Masonry Society (2011).

- 2014 Fellowship Research Award of the American Society for Nondestructive Testing for graduate research on "Unmanned Aerial Vehicle for Infrastructure Evaluation", student A. Ellenberg.

- ASNT Faculty award: Development of Undergraduate/Graduate Course CIVE 615 "Infrastructure Condition Evaluation", Bartoli CAEE (PI), Kontsos MEM (coPI), American Society of Nondestructive Testing (2011).

- Jacobs School of Engineering Research Expo Honorable Mention for the Poster "Structural Health Monitoring of Cables and Tendons by Embedded Sensors and Ultrasonic Guided Waves" (2007).

- Recipient of the 2006 Fellowship Research Award of the American Society for Nondestructive Testing for graduate research on "Built-in system for the structural health monitoring of adhesively-bonded components in aerospace structures", faculty advisor Prof. F. Lanza di Scalea.

- Recipient of the 2004 Fellowship Award in memory of "Albino Nasce' ", Bologna, Italy.

- Scholarship for the research project "Identification of mechanical parameters for fiber reinforced composite materials" at the University of Bologna, UNIBO, tutor Prof. A. Di Leo (2002).
- Recipient of the 2002 Fellowship Award of the "ECOMAP scpa" Rome, Italy.
- Italian Professional Engineering license since 2002.

PROPOSALS SUBMITTED

PROPOSALS SUBMITTED AS ASSOCIATE PROFESSOR (2016-2021)

- CICI: Secure and Resilient Architecture: Securing unmanned aerial system wireless sensor networks, Research proposal, PI Steven Weber, coPI **Ivan Bartoli** (14%), National Science Foundation, submitted on 4/19/2016, $1,000,000.22
- Supporting the Preservation of Burlington County Bridge Commission Infrastructure, Research proposal, PI **Ivan Bartoli**, coPIs Kurt J Sjoblom, Yared S Bayleyegn; Marcello Balduccini, Burlington County Bridge Commission, submitted on 6/9/2016, $25,000.00
- S&CC-IRG Preliminary Proposal Track 2: Modeling Urban Livability for Resilience and Sustainability, Research proposal, Emin Aktan, Eugena Ellis, Patrick Gurian, **Ivan Bartoli**, Marcello Balduccini, Simi Hoque, NSF, 12/19/2016, Preproposal
- Hurricane impact on lightweight steel structures in coastal regions, Research proposal, PI Yared Shifferaw Bayleyegn, coPI **Ivan Bartoli** (12.5%), National Science Foundation, submitted on 1/13/2017, $557,793.46
- Damage Assessment of Electrical Cable Insulation by Guided Ultrasonic Waves, Research proposal, PI **Ivan Bartoli**, Department of Energy / University of Texas at Austin, submitted on 2/15/2017, $299,997.37
- Development of a Subsurface Visualization System for the Detection and Monitoring of Scour about Bridge Foundations, Research proposal, PI Kurt J Sjoblom, coPI **Ivan Bartoli** (17.5%), National Cooperative Highway Research Program (NCHRP), submitted on 3/1/2017, $149,992.23

- Soil Visualization Using Passive and Active Stress Waves, Research proposal, PI Kurt J Sjoblom, coPI **Ivan Bartoli** (17.5%), National Science Foundation, submitted on 3/31/2017, $249,987.80

- UTC: Promoting Safety in Urban Environment through Advanced Health Monitoring of Transportation Infrastructure, Research proposal, PI Yaghoob Farnam, coPI **Ivan Bartoli** (23.33%), Virginia Commonwealth University, submitted on 8/11/2017, $300,000.02

- Identification of Water Pipe Material Based on Stress Wave Propagation, Research proposal, PI Sjoblom, Kurt J., coPI **Ivan Bartoli** 50% American Society for Nondestructive Testing, submitted on 10/15/2017, $20,000.00

- Use of Phase Change Materials in Concrete Transportation Structures and Pavements for Enhancing Freeze-Thaw Durability and Enabling Deicing/Snow-Melting Capability, Research proposal, PI Yaghoob Farnam, coPI **Ivan Bartoli** (10%), Federal Highway Admin, submitted on 4/19/2018, $1,040,372.86

- National Consortium for Transportation Infrastructure Durability and Resiliency Research proposal, PI Yaghoob Farnam, coPI **Ivan Bartoli** (20%), DOT / Louisiana State University, submitted on 11/20/2018, $150,000.24

- Reliable wireless sensors to assess bridge safety during routine and special inspections, Research proposal, PI **Ivan Bartoli** (50%), Drexel Venture Innovation Fund, submitted on 6/8/2019, $99,961

- Embedding reusable and rapidly deploy-able wireless sensors in routine and special bridge inspections for condition based asset management Research proposal, PI **Ivan Bartoli**, coPI Emin Aktan, Pennsylvania Department of Transportation, submitted on 10/31/2019, $60,000.00

- Topic 3, Drexel University Federal Highway Administration AMR BAA 2019: Reliable Wireless Sensors to Assess Bridge Safety during Routine and Special Inspections Research proposal, PI **Ivan Bartoli**, Federal Highway Admin, submitted on 9/19/2019, $499,837.31

- Development of an NDE Based Structural Identification Framework for Scouring Vulnerability Assessment of Bridge Substructures Research proposal, PI **Ivan Bartoli**, coPI Miguel Pando, American Society for Nondestructive Testing, submitted on 10/15/2019, $20,000.00

- Federal Highway Administration-Bridge-Net: Trustworthy Image Database to develop AI Decision-Support System for Bridge Asset Managers, Research proposal, PI **Ivan Bartoli**, Federal Highway Administration, submitted on 3/31/2020, $1,097,888.79

- Structural Health Monitoring (SHM) Current Practice and Web Manual Research proposal, PI **Ivan Bartoli**, FHWA/Pennoni Associates Inc., submitted on 7/28/2020, $249,998.44

- Framework for Improving Multi-Hazard Resilience of Bridges Considering Uncertain and Time-Varying Structure/Substructure/Soil Conditions Research proposal, PI **Ivan Bartoli**, coPIs Aspasia Zerva, Miguel Pando, National Science Foundation, submitted on 1/8/2021, $399,999.65

- Collaborative Research: Mid-Atlantic Center for Nondestructive Evaluation - Workforce Education and Training (MACNET) Education proposal, PI Vladimir Genis, coPI **Ivan Bartoli** (20%), National Science Foundation, submitted on 9/7/2020, $3,557,664.03

- Advancing Practices of In Situ Nondestructive Evaluation of Highway System Asset Foundational Condition and Capability Research proposal, PI **Ivan Bartoli**, National Cooperative Highway Research Program (NCHRP), submitted on 2/4/2021, $149,993.04

- Detection of lead based water pipelines using stress waves Research proposal, PI **Ivan Bartoli**, coPI Charles Haas, Coulter Program, submitted on 6/2/2021, $120,467.00

- Identifying Service Line Materials without excavation: Distinguishing LSLs from non-LSLs, PI **Ivan Bartoli**, coPI Charles Haas, Water Research Foundation, submitted on 6/7/2021, $50,000.00

PROPOSALS SUBMITTED AS ASSISTANT PROFESSOR (2010-2015)

- An Integrated SHM Approach for Damage Quantification, Research Fellowship, PI Antonios Kontsos, coPI **Ivan Bartoli**, ASNT, submitted on 10/14/2011, $15,000

- An Integrated Health Monitoring Approach for Damage Quantification in Structural "Hot Spots" , Research PI **Ivan Bartoli**, CAEE, coPI Antonios Kontsos, National Science Foundation, submitted on 10/3/2011, $394,342

- Guided Ultrasonic Waves-based system for the assessment of wastewater conveyance Research, PI **Ivan Bartoli**, CAEE Rizzo Pitt WERF, submitted on 10/29/2010, $130,229
- Development of Undergraduate/Graduate Course CIVE 615 "Infrastructure Condition Evaluation" Educational, PI **Ivan Bartoli**, coPI Antonios Kontsos, ASNT, submitted on 11/18/2010, $8,000
- Collaborative Research: GUEMI: A New Paradigm for Structural Health Monitoring of Civil Infrastructures, Drexel PI **Ivan Bartoli**, National Science Foundation, submitted on 2/15/2011, $272,758
- Catalyzing New International Collaborations: The Use of Life Cycle Assessment (LCA) Methods in Geotechnical Engineering Research/ Workshop, PI Gallagher, coPI **Ivan Bartoli**, National Science Foundation, submitted on 3/1/2011, $31,870
- INDP: A Cyber-Physical Laboratory for Multi-Disciplinary Learning and Research Educational, PI **Ivan Bartoli**, Purdue Univ. National Science Foundation, submitted on 7/14/2011, $15,000
- Condition Assessment of Bridge Post- Tensioning and Stay Cable Systems Using NDE Methods Research, PI **Ivan Bartoli**, Hsuan, Aktan (Drexel), Rizzo (Pitt), Veletzos (Merrimack), Smart Structure (Rantoul, IL), AID (Hamilton, NJ) NCHRP - TRB, submitted on 9/14/2011, $373,144
- An Integrated SHM Approach for Damage Quantification Research Vanniamparambil, PI Antonios Kontsos, PI **Ivan Bartoli**, CAEE American Society of Nondestructive Testing, submitted on 10/14/2011, $15,000
- Novel Optico-Acoustic Sensing System for Intelligent Structural Monitoring Research, PI Antonios Kontsos, National Science Foundation, submitted on 2/26/2012, $374,527
- Condition Assessment of Bridge Post- Tensioning and Stay Cable Systems Using NDE Methods Research, PI **Ivan Bartoli**, Hsuan, Aktan (Drexel), Rizzo (Pitt), Veletzos (Merrimack), Attanayake (Western Michigan), NCHRP - TRB, submitted on 2/22/2012, $383,213
- A Low-Cost, Hybrid Acoustic- Ultrasonic Technique for In-situ Bondline Condition Monitoring Research, PI **Ivan Bartoli**, Antonios Kontsos DOD - NAVAIR, submitted on 7/10/2012, $45,000

- Design and Implementation of a Structural Health Monitoring System for the Varina Enon Bridge Research, PI Antonios Kontsos, PI **Ivan Bartoli**, Virginia DOT, submitted on 8/3/2012, $23,360

- COLLABORATIVE RESEARCH: Corrosion Monitoring System for Civil Infrastructures Research, PI **Ivan Bartoli**, National Science Foundation, submitted on 9/27/2012, $248,747

- Novel Acoustics-based Framework for SHM of Navy Assets Research, PI Antonios Kontsos, coPI **Ivan Bartoli**, Office of Naval Research, submitted on 10/1/2012, $299,303

- Low-Powered Wired Sensors for Asset Management or Health Monitoring of Structures and Pavements Research, PI **Ivan Bartoli**, Moon, Aktan (Drexel), Intelligent Infrastructure Systems (Philadelphia, Pa), Smart Structure (Rantoul, IL), Federal Highway Administration, submitted on 10/4/2012, $750,000

- RAPID: Aerial Imaging and Ground- based Surveys for Post-Disaster Assessment of Areas Affected by Hurricane Sandy Research Pradhan, PI **Ivan Bartoli**, Antonios Kontsos National Science Foundation, submitted on 11/21/2012, $50,000

- Field Performance of Corrugated Pipe Manufactured with Recycled Polyethylene Content Research Hsuan, coPI **Ivan Bartoli**, NCHRP, submitted on 1/9/2013, $210,218

- MRI: Development of a combined remote sensing unmanned aerial and ground system for applications in civil infrastructures Research Pradhan, coPI **Ivan Bartoli**, Antonios Kontsos, Hsieh, Nishino National Science Foundation, submitted on 2/21/2013 983,002

- Novel Aerial Structural Condition Assessment of the Next Generation Infrastructure Research PI **Ivan Bartoli**, Pradhan, Antonios Kontsos, Hsieh National Science Foundation, submitted on 2/15/2013, $399,999

- Application for a Tier 1 Center under the FYI 2013 University Transportation Center (UTC) Program Grant Solicitation Research PI **Ivan Bartoli**, Antonios Kontsos US DOT, submitted on 3/6/2013 120,000

- Engineering Design for Undergraduate Civil Education – The Drexel EDUCE Program Teaching Sjoblom, Aktan, PI **Ivan Bartoli**, Pradhan National Science Foundation, submitted on 2/4/2014, $261,950

- MRI: Development of a Combined Remote Sensing Unmanned Aerial and Ground System for Applications in Civil Infrastructures Research Pradhan, Moon, Antonios Kontsos, Hsieh, Nishino National Science Foundation, submitted on 1/23/2014, $975,289 Role: Senior Investigator

- Mapping Urban Infrastructure Systems, Processes and Products Research Pradhan, Gurian, Sheller, Sjoblom, Weber National Science Foundation, submitted on 3/19/2014, $299,998

- Remote Monitoring of Infrastructure by Multispectral Interrogation of Nanofabricated Coatings Research PI **Ivan Bartoli**, Antonios Kontsos, McCarthy National Science Foundation, submitted on 2/20/2015, $446,891

- Large Area Inspection of Composite Aircrafts Using Unmanned Aerial Systems Research Antonios Kontsos, coPI **Ivan Bartoli**, NASA, submitted on 3/30/2015, $904,269

FUNDED RESEARCH PROJECTS

FUNDED RESEARCH PROJECTS (2016-2021)

Project Title: "Supporting the Preservation of Burlington County Bridge Commission Infrastructure"

Role: PI (25%)

Source of Support: Burlington County Bridge Commission

Total Award Amount: $25,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 06/09/16-06/08/17

Project Title: "EARP, Exploratory Advanced Research Program, Topic 1, Virtual Nondestructive Evaluation (NDE) Laboratory for Highway Structures"

Role: PI (25%)

Source of Support: Federal Highway Administration

Total Award Amount: $1,186,116

Total Award Period Covered: 5 years

Location of Project: Drexel University

Duration: 10/01/15-09/30/20

Project Title: "Identification of Water Pipe Material Based on Stress Wave Propagation"
Role: coPI (25%)
Source of Support: American Society of Non Destructive Testing
Total Award Amount: $20,000
Total Award Period Covered: 1 year
Location of Project: Drexel University
Duration: 10/01/15-09/30/20

Project Title: "Reliable Wireless Sensors to Assess Bridge Safety during Routine and Special Inspections"
Role: PI (100%)
Source of Support: Federal Highway Administration
Total Award Amount: $499,835
Total Award Period Covered: 2 years
Location of Project: Drexel University
Duration: 06/01/2021–05/30/2023

Project Title: "Detection of lead based water pipelines using stress waves"
Role: PI (100%)
Source of Support: Coulter Program
Total Award Amount: $120,467
Total Award Period Covered: 1 year
Location of Project: Drexel University
Duration: 07/01/2021–06/30/2022

FUNDED RESEARCH PROJECTS (2010-2015)

Project Title: "Aerial Imaging and Ground-based Surveys for Post-Disaster Assessment of Areas Affected by Hurricane Sandy"
Role: coPI (30%)
Source of Support: NSF

Total Award Amount: $50,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 01/01/2013 – 12/31/2013

Project Title: "A Low-Cost, Hybrid Acoustic-Ultrasonic Technique for In-situ Bondline Condition Monitoring"

Role: PI

Source of Support: NAVAIR

Total Award Amount: $45,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 11/01/12-10/31/13

Project Title: "Use of DIC During Seismic Testing of Full-Scale Partially Grouted Masonry Buildings"

Role: coPI (50%)

Source of Support: NSF

Total Award Amount: $50,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 09/01/13-08/31/14

Project Title: "Development of Educational Module for Digital Image Correlation"

Role: co-PI (25%)

Source of Support: Trilion Quality Systems

Total Award Amount: $57,490.38

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 05/01/13-04/30/14

Project Title: "Novel Acoustics-based Framework for SHM of NAVY Assets"

Role: coPI (50%)

Source of Support: ONR

Total Award Amount: $299,303

Total Award Period Covered: 3 years

Location of Project: Drexel University

Duration: 10/01/12-09/30/15

Project Title: "Non Destructive Approach for Damage Detection and Its Evolution in Hard Armor Protective Inserts"

Role: coPI (50%)

Source of Support: PEO Soldier

Total Award Amount: $447,660

Total Award Period Covered: 3 years

Location of Project: Drexel University

Duration: 07/01/13-06/30/16

Project Title: "Support for the Long Term Bridge Performance (LTBP) Project"

Role: PI (25%)

Source of Support: Pennoni Associates Inc./FHWA

Total Award Amount: $250,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 01/25/14-04/30/15

Project Title: "Long-Term Bridge Performance (LTBP) Program: Bridge Assessment Using Unmanned Aerial Systems"

Role: PI (25%) Source of Support: Rutgers University

Total Award Amount: $70,000

Total Award Period Covered: 1 year

Location of Project: Drexel University

Duration: 04/01/14-06/30/15

Project Title: "Enabling Asset and Risk Management for Burlington County Bridge Commission: Identifying Processes and Needs"
Role: PI (25%)
Source of Support: Burlington County Bridge Commission
Total Award Amount: $100,000
Total Award Period Covered: 1 year
Location of Project: Drexel University
Duration: 06/01/14-05/31/15

Project Title: "Low-Powered Wired Sensors for Asset Management or Health Monitoring of Structures and Pavements"
Role: PI (25%)
Source of Support: Federal Highway Administration
Total Award Amount: $750,000
Total Award Period Covered: 3 years
Location of Project: Drexel University
Duration: 05/01/13-04/30/16

Project Title: "Unmanned Aerial Vehicle for Infrastructure Evaluation"
Role: coPI (50%)
Source of Support: ASNT
Total Award Amount: $20,000
Total Award Period Covered: 1 year
Location of Project: Drexel University
Duration: 07/01/14-06/30/15

Project Title: "Proof-Level Load Testing and Assessment of Unknown Foundations in WV"
Role: coPI (25%)
Source of Support: West Virginia Department of Transportation
Total Award Amount: $67,300
Total Award Period Covered: 1 year
Location of Project: Drexel University

Duration: 10/01/14-09/30/15

INVITED SEMINARS AND PRESENTATIONS

- **Bartoli, I.**, "Numerical Prediction of the Dynamic Behavior of Composite Structural Components and Estimation of Mechanical Properties" Department of Structural Engineering, University of California San Diego, San Diego, California April 2008.

- **Bartoli, I.**, "Structural Health Monitoring in Aerospace Structures by Ultrasonic Guided Waves" Department of Aerospace Engineering, Georgia Tech, Atlanta, Georgia April 2009.

- **Bartoli, I.**, "Structural Health Monitoring in Civil Structures by Ultrasonic Guided Waves" Department of Civil Environmental Engineering, Catholic University of America, Washington D.C., March 2010.

- **Bartoli, I.**, "Structural Health Monitoring in Civil Structures by Ultrasonic Guided Waves" Department of Civil, Architectural and Environmental Engineering, Drexel University, Philadelphia, PA, April 2010.

- **Bartoli, I.**, "Structural Health Monitoring in Civil Structures by Ultrasonic Guided Waves" Department of Civil Engineering, North Carolina University, Rayleigh, NC April 2010.

- **Bartoli, I.**, "Structural Health Monitoring in Civil Engineering by Ultrasonic Guided Waves" Civil Engineering Department, Temple University, Philadelphia PA, April 2011.

- **Bartoli, I.**, "Infrastructure Condition Assessment using high frequency stress waves" National Research Council, Ottawa, Canada, July 2012.

- **Bartoli, I.**, "Structural Health Monitoring and Nondestructive Testing in Civil Engineering" Department of Mechanical and Aerospace Engineering, New York University, April 2015

- **Bartoli, I.**, "Virtual Nondestructive Evaluation Laboratory for Highway Structures", Transportation Research Board, NDT subcommittee meeting (AFF40(1)) – January 2017

- **Bartoli, I.** "Multipurpose wireless sensors for asset management and health monitoring of structures – TRL Assessment", 6 June 2017, Drexel University, Philadelphia, PA

- **Bartoli, I.** Aktan E. "Virtual Nondestructive Evaluation Laboratory for Highway Structures", Workshop organized in collaboration with FHWA, 22 October 2018, Caltrans, Sacramento, CA.

- **Bartoli, I.** "Multipurpose wireless sensors for bridge assessment", 10 June 2018, Turner-Fairbank Highway Research Center, McLean, VA.

- **Bartoli, I.** "Virtual NDE Laboratory and Wireless Sensor monitoring: the I-76 Penncoyd Viaduct Case Study", June 21 2018, PennDOT, Harrisburg, PA

- **Bartoli, I.**, Aktan, E., Farnam, Y., "Technology leveraging for Highway structures, 27 September 2018, PennDOT Research Symposium, Harrisburg PA

- **Bartoli, I.**, Aktan, E., Moon, F., "A partnership to adopt technology leveraging for the preservation of DRPA assets", 8 Aug 2019, Delaware River Port Authority

- **Bartoli, I.**, "Virtual Nondestructive Evaluation Laboratory for Highway Structures TRL assessment", 13 August 2019, Webinar hosted by Volpe National Transportation Systems Center — U.S. Department of Transportation

- **Bartoli, I.** "Towards the integration of structural health monitoring and nondestructive testing in civil engineering", 2 December 2020, Department of Engineering Science and Mechanics, Penn State University, University Park, PA

- **Bartoli, I.**, Sjoblom, K., Haas, C., Detection of Lead based water Pipelines using stress waves, 26 May 2021, Webinar hosted by the Coulter Program

- **Bartoli, I.**, Sjoblom, K., Haas, C., Detection of Lead based water Pipelines using stress waves, 16 June 2021, Webinar hosted by CDM Smith

- **Bartoli, I.**, Sjoblom, K., Haas, C., A Lead pipeline detection approach, 1 July 2021, Webinar hosted by American Water and Environmental Research Fund

- Aghayere, A., **Bartoli, I.**, "Lessons learned from the Surfside condo collapse", 26 August 2021, Webinar hosted by Drexel's online programs

EDITORIAL/REVIEWER ACTIVITIES

- **Guest Editor:** Special Issue for Mathematical Problems in Engineering: "New Strategies and Challenges in SHM for Aerospace and Civil Structures"
- **Reviewer:** Journal of Intelligent Material Systems and Structures, Journal of bridge engineering, Journal of Sound and Vibration, Journal of the Acoustical Society of America, NDT&E International, International Journal of Structural Health Monitoring, Smart Materials and Structures, Structure and Infrastructure Engineering, Journal of Infrastructure Systems, Journal of Nondestructive Evaluation, Shock and Vibration, Ultrasonics, Mechanical Systems and Signal Processing, Experimental Mechanics
- **Research Proposal reviewer:** US National Science Foundation, CMMI Program
- **Research Proposal reviewer:** National Research Foundation, Competitive Support for Unrated Researchers (CSUR) Program, South Africa.

TEACHING

COURSES TAUGHT

I have taught a large number of courses in the areas of Structural Analysis and Design as well as Mechanics. A detailed list of the courses taught as Assistant professor is provided in Table 1.1. Table 1.2 summarizes the courses I taught between the Fall 2016 and Spring 2021 while Associate Professor. Finally, Table 1.3 summarizes the independent studies I offered.

ADDITIONAL TEACHING ACTIVITIES

- Lectures on Theory of Structures I in Spring 2013 (in substitution of Prof. Zerva)
- Co-teaching of CIVE 701 and 703 (Structural Analysis I and III) in 2012-2013 (selected lectures in support of Prof. Aktan)
- Lectures on Introduction to Structures as part of CIVE 201 "Introduction to Infrastructure Engineering" (2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019)
- Lectures as part of "Steel Bridge Design" in Fall 2011

Table 1: Courses taught as Assistant Professor

Course #	Year	Term	Credits	# Students	Course Title
CIVE 615-501	2010	FALL	3	8	Infrastructure Cond. Eval.
CIVE 702-501	2011	WINTER	3	25	Structural Analysis II
CIVE 375-001	2011	SPRING	3	9	Structural Material Behavior
CIVE 790-504	2011	SPRING	3	22	Adv. Mechanics of Materials II
CIVE 615-001	2011	FALL	3	25	Infrastructure Cond. Eval.
CIVE 375-001	2012	WINTER	3	48	Structural Material Behavior
CIVE 790-002	2012	SPRING	3	16	Exp. and Adv. Mechanics
CIVE 402-003	2012	SPRING	3	22	Structural Design III
CIVE 701-001	2012	FALL	3	13	Structural Analysis I
CIVE 615-001	2012	FALL	3	16	Infrastructure Cond. Eval.
CIVE 375-001	2013	WINTER	3	34	Structural Material Behavior
CIVE 790-002	2013	SPRING	3	8	Adv & Experim. Mechs
CIVE 300-001	2013	SPRING	3	24	Theory of Structures II
CIVE 615-001	2013	FALL	3	27	Infrastructure Cond. Eval.
CIVE 702-001	2014	WINTER	3	20	Structural Analysis I
CIVE 375-001	2014	WINTER	3	41	Structural Material Behavior
CIVE 790-002	2014	SPRING	3	8	Adv & Experim. Mechs
CIVE 615-001	2014	FALL	3	25	Infrastructure Cond. Eval.
CIVE 702-001	2015	WINTER	3	21	Structural Analysis I I
CIVE 375-001	2015	WINTER	3	50	Structural Material Behavior
CIVE 790-002	2015	SPRING	3	8	Adv & Experim. Mechs

- Advisor for Senior Design Teams (8 groups as Assistant Professor, 5 groups as Associate Professor)
  - CAEE Group 26 (2011-12), "Rehabilitation/Reconstruction of the Delair Bridge", 4 students
  - CAEE Group 7 (2011-12), "South Street – Penn's Landing Bridge Connection", 4 students
  - MEM Group 11 (2012-13), "Unmanned Aerial Vehicle for Infrastructure Evaluation", 3

Table 2: Courses taught as Associate Professor

Course #	Year	Term	Credits	# Students	Course Title
CIVE 615-001	2015	FALL	3	33	Infrastructure Cond. Eval.
CIVE 702-001	2016	WINTER	3	22	Structural Analysis II
CIVE 303-002	2016	WINTER	3	33	Intro to Structural Design
CIVE 615-001	2016	FALL	3	25	Infrastructure Cond. Eval.
CIVE 303-002	2017	WINTER	3	30	Intro to Structural Design
CIVE T-780	2017	SPRING	3	8	Adv. and Exp. Mech. of Mat. II
CIVE 605-001	2017	FALL	3	13	Adv. Mechanics of Materials
CIVE 615-001	2017	FALL	3	14	Infrastructure Cond. Eval.
CIVE 303-002	2018	WINTER	3	15	Intro to Structural Design
CIVE 375-001	2018	WINTER	3	56	Structural Material Behavior
CIVE T-780	2018	SPRING	3	10	Exp. Structural Mechanics
CIVE 605-001	2018	FALL	3	12	Adv. Mech. of Materials
CIVE 615-001	2018	FALL	3	9	Infrastructure Cond. Eval.
CIVE 303-002	2019	WINTER	3	21	Intro to Structural Design
CIVE 375-001	2019	WINTER	3	31	Structural Material Behavior
CIVE 605-001	2019	FALL	3	10	Adv. Mechanics of Materials
CIVE 615-001	2019	FALL	3	8	Infrastructure Cond. Eval.
CIVE 375-001	2020	WINTER	3	34	Structural Material Behavior
CIVE T-680	2020	SPRING	3	5	Adv. and Appl. Mech. of Mat.
CIVE 605-001	2020	FALL	3	14	Adv. Mechanics of Materials
CIVE 615-001	2020	FALL	3	9	Infrastructure Cond. Eval.
CIVE 375-001	2021	WINTER	3	35	Structural Material Behavior
CIVE 702-001	2021	WINTER	3	5	Structural Analysis II
CIVE 703-001	2021	SPRING	3	5	Structural Analysis III

students

- CAEE Group 19 (2012-13), "Preventing Marine growth on seawater/freshwater channels using ultrasonic technology", 3 students
- CAEE Group 31 (2012-13), "Retrofit and Redesign of CSX West Philadelphia Elevated Railroad Line and Area on Drexel Campus", 5 students

  - CAEE Group 2 (2013-14), "No More Shanty Houses: Housing Kits as an upgrade to current living conditions in slums", 4 students
  - CAEE/MEM Group 16 (2013-14), "Multi-scale Patterning and Digital Image Correlation for Structural Health Monitoring", 4 students
  - MEM Group 8 (2014-15), "Unmanned Aerial System for Structural Engineering Applications", 5 students
  - CAEE Group 26 (2015-16), "Bridge No. 205, Pine Road over Pennypack Creek", 5 students
  - CAEE Group 34 (2015-16) "Glen Foerd", 3 students
  - CAEE Group 12 (2016-17), "Structural Design of 40 Story Resort Hotel in Chicago", 5 students
  - CAEE Group 22 (2017-18), "Bridgewater Place", 4 students
  - CAEE Group 10 (2019-20), "Drexel's Structural Testing Facility Educational Improvements ", 3 students

- Technical Reviewer for Senior Design Teams (2 groups in 2010-11, 1 group in 2011-12, 1 group in 2012-13, 1 group in 2013-14, 2 groups in 2014-15, 1 group in 2015-16, 1 group in 2017-18, 1 group in 2019-20, 1 group in 2019-21)

- Advisor for several students for CIVE 477 Senior Seminar Paper (4 students in 2010, 7 students in 2011, 9 students in 2012, 4 students in 2013, 4 students in 2014, 5 students in 2015, 5 students in 2016, 5 students in 2017, 1 student in 2018, 1 students in 2019, 3 students in 2020)

- Tutoring for FE review for the CAEE Senior undergraduate students (Topic covered Statics, 2010, 2011, 2012, 2013, 2014, 2015, 2016)

PROFESSIONAL SERVICES

STUDENTS MENTORING

Undergraduate students

Gabriel Jen, Robert Phillips, (NDE Laboratory at UCSD, Advisor Prof. Lanza di Scalea), Evelyn Ochoa (Structural Engineering Department, UCSD)

Table 3: Independent Studies

Period #	Course Number	Title	# Students	% Taught
Spring 2012-13	CIVE 799 002	SHM and NDE	(3)	100%
Spring 2012-13	CIVE 399 001	SHM and NDE	(3)	100%
Summer 2012-13	CIVE 799 003	SHM and NDE	(3)	100%
Summer 2013-14	CIVE 799 003	Modeling leveraging FEM	(3)	100%
Fall 2014-15	CIVE 799 001	Modeling leveraging FEM	(3)	100%
Spring 2017-18	CIVE I299 001	Intro to NDE	(1)	100%
Fall 2018-19	CIVE I599 001	Intro to SHM	(1)	100%
Winter 2018-19	CIVE I599 002	Intro to SHM	(1)	100%

Independent Research: Neha Jaffry, Colin Henner, Mustafa Furkan, Michael Wilson, Kyle Jurgelewicz, Sofya Suntsova, Andrew Paladino, Sthephen Bartal, Audrey Ryan, Matthew Morimoto, El haji Mbengue, Amanda Martino, Helena Kim, Aaron Hicks, Jane Truong

Master students

Andrea Biserni (graduated on 2002), Massimo Montuschi (graduated on 2002), University of Bologna, Italy; Marzia Mezzanotte, Patrizia Di Leo, Claudio Nucera (graduated in 2008), University of Palermo, Italy; Federico Manfroni (graduated in 2016), University of Bologna, Italy; Chiara Giuliani (graduated in 2018), University of Bologna, Italy; Michelle Burnworth (Drexel), Vasiliki Sakagianni (Drexel), Charles Young (Drexel), Stilianos Livadiotis (Drexel).

PhD students

Prashanth Abraham Vanniamparambil (MEM), Fuad Khan (CAEE), Qiang Mao (CAEE), Shi Ye (CAEE), Andrew Ellenberg (MEM), Shane Esola (MEM), Stylianos Livadiotis (CAEE), Melvin Mathew (MEM), Shakerur Ridwan (MEM), Mustafa Furkan (CAEE), Matteo Mazzotti (visiting scholar at CAEE), Xiangang Lai (CAEE), Yao Wang (ECE), Kermelos Woldeyes (CAEE), Elias Ali (CAEE), KIM Iqbal (CAEE), Husain Ibrahaim (CAEE).

Tutoring

Alma Mater Studiorum (Bologna) in Strength of materials

MEMBER OF THE FOLLOWING EXAMINATION COMMITTEES

Qualifying examination of the Engineers Professional Association (Bologna) Structural Mechanics (Prof. E. Viola, Prof. A. Di Leo, Prof. G. Pascale, DISTART, Faculty of Engineering University of Bologna)

LABORATORY AND FIELD TESTING EXPERIENCE

- Use of ultrasonic and optical devices, strain gages, accelerometers
- Use of impact-echo and modal analysis instrumentation
- Use of Infrared Thermography equipment
- Wireless and wired sensing systems
- Use of oscilloscopes, high-power ultrasonic amplifiers, commercial ultrasonic transducers, National Instruments^{TM} PXI
- Inspection of concrete structural components, pipelines, bars, strands, composite and metallic plates, railroad tracks by means of ultrasonic techniques

RECENT COLLABORATORS AND ADVISORS

- Piacecki Aricraft Corporation
- Pennoni
- Advanced Infrastructure Design, Hamilton, NJ
- Pennsylvania Concrete Masonry Association, Lebanon, PA
- Xiaofeng "Bill" Zhang, Assistant Professor, Temple University, Philadelphia, PA
- Hyonny Kim, Associate Professor, University of California San Diego, CA
- Piervincenzo Rizzo, Assistant Professor, University of Pittsburgh, PA
- Salvatore Salamone, Assistant Professor, University at Buffalo, NY
- Branko Glisic, Assistant Professor, Princeton University, New Jersey

- Raimondo Betti, Professor, Columbia University, New York, NY
- Antonios Kontsos, Assistant Professor, MEM, Drexel University
- Dr. M. Fateh (Program manager), Dr. Gary Carr (Chief), Office of Railroad Development, U.S. Department of Transportation, Federal Railroad Administration.
- Dr. Charles S. Sikorsky (Program manager), Division of Engineering Services, California Department of Transportation.
- Prof. F. Lanza di Scalea (Ph.D. advisor), Structural Engineering Dept., UCSD
- Dr. H. Matt, ATA Engineering, San Diego CA
- Prof. E. Viola, Prof. A. Di Leo, Prof. A. Marzani, G. Castellazzi and Prof. G. Pascale (collaborators), Structural Engineering Dept., University of Bologna, Italy
- Andrew Colombo, National Research Council of Canada
- Emin Aktan, Franklin Moon, Sabrina Spatari, Patricia Gallagher, Grace Hsuan (CAEE, Drexel University)
- Dan Xiang, X-waveinnovations
- Valery Godinez, Mistrasgroup

ADDITIONAL INFORMATION

COMPUTER SKILLS

- Extensive MATLAB programming. Proficiency of MATLAB toolboxes such as the Wavelet Transform Toolbox and Partial Differential Equation Toolbox.
- Extensive use of SOLID WORKS
- Experience with C++ and FORTRAN languages
- Experience with computer software applications including Autocad, Office, Maple, NI-LabVIEW
- Finite Element packages ABAQUS, SAP, ANSYS
- Proficiency with Windows operating system

LANGUAGE SKILLS

Italian, English

PERSONAL INFORMATION

Born in Rimini (Italy) on June 30, 1975

US citizenship

Hobbies: reading (Italian and English newspapers), cooking and eating, sports (surfing, beachvolley, swimming, soccer, tennis), traveling whenever money and time are available.

PUBLICATIONS

BOOK CHAPTERS

1. Lanza di Scalea, F., Rizzo, P., Coccia, S., **Bartoli, I.** and Fateh.M. "On-Line High-speed Rail Defect Detection – Phase III," Chapter 4 of Technology in Rail Transport Management, P.S. Ranade, ed., The Icfai University Press, India, pp. 55-65, (2007).

2. Rizzo, P., Coccia, S., **Bartoli, I.**, and Lanza di Scalea, F., "Non-contact Rail Monitoring by Ultrasonic Guided Waves," in Chapter 151 of Encyclopedia of Structural Health Monitoring, C. Boller, F-K. Chang, and Y. Fujino, eds., John Wiley & Sons, Chichester, U.K., pp. 2397-2410, (2009).

3. Lanza di Scalea, F., **Bartoli, I.**, Rizzo, P., Marzani, A., Sorrivi, E., and Viola, E., "Structural Health Monitoring of Multi-wire Strands," in Chapter 151 of Encyclopedia of Structural Health Monitoring, C. Boller, F-K. Chang, and Y. Fujino, eds., John Wiley & Sons, Chichester, U.K., pp. 2487-2503, (2009).

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1. Viola, E., **Bartoli, I.** and Marzani, A. "Boundary Conditions Effect on the Dynamic Instability of Orthotropic Plates," The Journal Scientific Israel-Technological- Advantages, Vol. 5, No. 1, pp. 66-83 (2003).

2. **Bartoli, I.**, Lanza di Scalea, F., Fateh, M. and Viola. E. "Modeling guided wave propagation with application to the long-range defect detection in rail road tracks," NDT & E International, Vol. 38, pp. 325-334 (2005).

3. Rizzo, P., **Bartoli, I.**, Marzani A., and Lanza di Scalea, F., "Defect Classification in Pipes by Neural Networks using Multiple Guided Ultrasonic Wave Features," ASME Journal of Pressure Vessel Technology, Special Issue on the Nondestructive Evaluation of Pipeline and Vessel Structures, Vol. 127, No. 3, pp. 294- 303 (2005).

4. Lanza di Scalea, F., Rizzo, P., Coccia, S., **Bartoli, I.**, Fateh, M., Viola, E. and Pascale, G., "Non-Contact Ultrasonic Inspection of Rails and Signal Processing for Automatic Defect

Detection and Classification," Insight - Non-Destructive Testing & Condition Monitoring, Vol. 47, No. 6, pp. 346-353 (2005).

5. Lanza di Scalea, F., **Bartoli, I.**, Rizzo, P. and Fateh, M. "High-speed Defect Detection in Rails by Non- contact Guided Ultrasonic Testing," Transportation Research Record, Journal of the Transportation Research Board, No. 1916, pp. 66-77 (2005).

6. Matt, H., **Bartoli, I.** and Lanza di Scalea, F. "Ultrasonic guided wave monitoring of composite wing skin-to- spar bonded joints in aerospace structures," Journal of the Acoustical Society of America, Vol. 118, pp. 2240- 2252 (2005).

7. **Bartoli, I.**, Marzani, A., Lanza di Scalea, F., and Viola, E. "Modeling wave propagation in damped waveguides of arbitrary cross-section," Journal of Sound and Vibration, Vol. 295 No. 3-5, pp. 685-707 (2006).

8. Lanza di Scalea, F., Rizzo, P., Coccia, S., **Bartoli, I.**, and Fateh, M., "Laser-Air-Coupled Hybrid Detection in Rail Tracks: Status of FRA Prototype Development at UC San Diego," Transportation Research Record, Journal of the Transportation Research Board, No. 1943, pp. 57-64 (2006).

9. Lanza di Scalea, F., Matt, H. and **Bartoli, I.** "The response of rectangular piezoelectric sensors to Rayleigh and Lamb ultrasonic waves," Journal of the Acoustical Society of America, Vol. 121 pp. 175-187 (2007).

10. Rizzo, P., **Bartoli, I.**, Cammarata M. and Coccia S., "Digital signal processing for rail monitoring by means of ultrasonic guided waves," Insight - Non-Destructive Testing & Condition Monitoring, Vol. 49, No. 6, pp. 327-332 (2007).

11. Lanza di Scalea, F., Matt, H., **Bartoli, I.**, Coccia, S., Park, G. and Farrar, C. "Health Monitoring of UAV wing skin-to-spar joints using guided waves and macro fiber composite transducers," Journal of Intelligent Material Systems and Structures, Vol. 18, 373-388 (2007).

12. Marzani, A., Viola, E., **Bartoli, I.**, Lanza di Scalea, F. and Rizzo, P.A "Semi-analytical finite element formulation for modeling stress wave propagation in axisymmetric damped waveguides," Journal of Sound and Vibration, Vol. 318 No. 3, pp. 488-505 (2008).

13. Sabra, K., Srivastava, A., Lanza di Scalea, F., **Bartoli, I.**, Rizzo, P. and Conti S. "Structural health monitoring by extraction of coherent guided waves from diffuse fields," Journal of the Acoustical Society of America, Vol. 123, No. 1, pp. EL8-EL13 (2008).

14. **Bartoli, I.**, Salamone, S., Phillips, R., Lanza di Scalea, F., Coccia, S. and Sikorsky, C. "Monitoring Prestress Level in Seven-wire Prestressing Tendons by Inter-wire Ultrasonic Wave Propagation," Journal of Advances in Science and Technology – Embodying Intelligence in Structures and Integrated Systems, Vol. 56, pp. 200- 205, (2008).

15. Salamone, S., **Bartoli, I.**, Lanza di Scalea, F. and Coccia S. "Temperature Effect on Guided Wave Based Macrofiber Composite Transduction," Materials Evaluation, Vol. 66(10), pp. 1071-1076, 2008.

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17. Marzani, A., **Bartoli, I.** "High frequency waves propagating in octagonal bars: a low cost computation algorithm," Algorithms, Vol. 2(1), pp. 227-246, (2009).

18. Salamone, S., Fasel, T., **Bartoli, I.**, Srivastava, S., Lanza di Scalea, F., Todd, M. "Structural health monitoring of adhesively-bonded joints in aerospace structures," Materials Evaluation – Special Issue, Accepted for Publication

19. Coccia, S., **Bartoli, I.**, Salamone, S., Phillips, R., Lanza di Scalea, F., Fateh, M., and Carr, G., "Noncontact Ultrasonic Guided Wave Detection of Rail Defects" Transportation Research Record, Journal of the Transportation Research Board, No. 2117, pp. 77-84 (2009).

20. **Bartoli, I.**, Salamone, S., Phillips, R., Lanza di Scalea, F., and Sikorsky, C.S. "Use of interwire ultrasonic leakage to quantify loss of prestress in multiwire tendons," Journal of Engineering Mechanics, Vol. 137, pp. 324-333, (2011).

21. Srivastava, A., **Bartoli, I.**, Salamone, S., and Lanza di Scalea, F., "Higher Harmonic Generation in Nonlinear Waveguides of Arbitrary Cross-Section," Journal of the Acoustical Society of America, Vol. 127(5) pp. 2790- 2796 (2010).

22. Salamone, S., **Bartoli, I.**, Di Leo, P., Lanza di Scalea, F., Ajovalasit, A., D'Acquisto, L., Rhymer, J., and Kim, H., "High Velocity Impact Location on Aircraft Panels using Macro-fiber Composite Piezoelectric Rosettes," Journal of Intelligent Materials and Structures, Vol. 21(9) pp. 887-896 (2010).

23. **Bartoli, I.**, Phillips, R., Coccia, S., Srivastava, A., Lanza di Scalea, F., Fateh, M., Carr, G., "Stress Dependence of Ultrasonic Guided Waves in Rails," Transportation Research Record, Journal of the Transportation Research Board, Vol. 2159, pp. 91-97 (2010).

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31. Castellazzi G., Krysl P., **Bartoli, I.**, "A displacement-based finite element formulation for the analysis of laminated composite plates," Composite Structures Vol. 95, pp. 518-527 (2013).

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34. Vanniamparambil, P.A., Bolhassani, M., Carmi, R., Khan, F., **Bartoli, I.**, Moon, F.L., Hamid, A. and Kontsos, A., (2013) "A data fusion approach for progressive damage quantification in reinforced concrete masonry walls", Smart Materials and Structures, Vol. 23(1), 015007.

35. Cuadra, J., Vanniamparambil, P.A., Hazeli, K., **Bartoli, I.** and Kontsos, A. (2015) "Damage Quantification in Polymer Composites using a Hybrid NDT Approach", Composites Science and Technology, Vol. 83, pp. 11-21.

36. Mazzotti, M., Marzani, A., **Bartoli, I.** (2014). Dispersion analysis of leaky guided waves in fluid-loaded waveguides of generic shape. Ultrasonics, 54(1), 408-418.

37. Mazzotti, M., **Bartoli, I.**, Castellazzi, G. and Marzani, A., (2014) "Computation of leaky guided waves dispersion spectra using vibroacoustic analyses and the Matrix Pencil Method: a validation study for immersed rectangular waveguides" 10.1016/j.ultras.2014.05.009.

38. Mazzotti, M., **Bartoli, I.** and Marzani, A., (2014). "Ultrasonic leaky guided waves in fluid-coupled generic waveguides: hybrid finite-boundary element dispersion analysis and experimental validation". Journal of Applied Physics, Accepted for Publication.

39. Khan, F., Rajaram, S., Vanniamparambil, P. A., Bolhassani, M., Hamid, A., Kontsos, A., **Bartoli, I.** (2014). Multi-sensing NDT for damage assessment of concrete masonry walls. Structural Control and Health Monitoring.

40. Lanza di Scalea, Rizzo, P., Salamone, S., **Bartoli, I.**, & Al-Nazer, L. (2013). Ultrasonic Tomography for Three-Dimensional Imaging of Internal Rail Flaws. Transportation Research Record: Journal of the Transportation Research Board, 2374(1), 162-168.

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43. Vanniamparambil, P.A., Carmi, R., Khan, F., Cuadra, J., **Bartoli, I.**, Kontsos, A. (2015) "An active–passive acoustics approach for bond-line condition monitoring in aerospace skin stiffener panels" Aerospace Science and Technology 43, 289-300

44. Cuadra, J., Vanniamparambil, P. A., Servansky, D., **Bartoli, I.**, & Kontsos, A. (2015). Acoustic emission source modeling using a data-driven approach. Journal of Sound and Vibration

45. Khan, F., Bolhassani, M., Kontsos, A., Hamid, A., **Bartoli, I.**, (2015) Modeling and experimental implementation of infrared thermography on concrete masonry structures, Infrared Physics & Technology 69, 228-237

46. Rajaram, S., Cuadra, J., Saralaya, R., **Bartoli, I.** and Kontsos, A., 2015. In situ CTE measurements and damage detection using optical metrology. Measurement Science and Technology, 27(2), p.025202.

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50. Ellenberg, A., Kontsos, A., Moon, F. and **Bartoli, I.**, 2016. Bridge related damage quantification using unmanned aerial vehicle imagery. Structural Control and Health Monitoring, 23(9), pp.1168-1179.

51. Ellenberg, A., Kontsos, A., Moon, F. and **Bartoli, I.**, 2016. Bridge deck delamination identification from unmanned aerial vehicle infrared imagery. Automation in Construction, 72, pp.155-165.

52. Mazzotti, M., Miniaci, M. and **Bartoli, I.**, 2017. Band structure analysis of leaky Bloch waves in 2D phononic crystal plates. Ultrasonics, 74, pp.140-143.

53. Bolhassani, M., Hamid, A.A., Rajaram, S., Vanniamparambil, P.A., **Bartoli, I.** and Kontsos, A., 2017. Failure analysis and damage detection of partially grouted masonry walls by enhancing deformation measurement using DIC. Engineering structures, 134, pp.262-275.

54. Rajaram, S., Vanniamparambil, P.A., Khan, F., Bolhassani, M., Koutras, A., **Bartoli, I.**, Moon, F., Hamid, A., Benson Shing, P., Tyson, J. and Kontsos, A., 2017. Full-field deformation measurements during seismic loading of masonry buildings. Structural Control and Health Monitoring, 24(4), p.e1903.

55. Esola, S., **Bartoli, I.**, Horner, S.E., Zheng, J.Q. and Kontsos, A., 2017. Defect detection via instrumented impact in thick-sectioned laminate composites. Journal of Nondestructive Evaluation, 36(3), pp.1-18.

56. Billen, P., Mazzotti, M., Pandelaers, L., Zhao, W., Liu, Z., Redus, J., Loya, I.D., **Bartoli, I.**, Farnam, Y., Spatari, S. and Hsuan, Y.G., 2018. Melt ceramics from coal ash: Constitutive product design using thermal and flow properties. Resources, Conservation and Recycling, 132, pp.168-177.

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58. Li, Y., Ye, S. and **Bartoli, I.**, 2018. Semisupervised classification of hurricane damage from postevent aerial imagery using deep learning. Journal of Applied Remote Sensing, 12(4), p.045008.

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60. Mazzotti, M., Miniaci, M. and **Bartoli, I.**, 2019. A numerical method for modeling ultrasonic guided waves in thin-walled waveguides coupled to fluids. Computers & Structures, 212, pp.248-256.

61. Mazzotti, M., **Bartoli, I.** and Miniaci, M., 2019. Modeling Bloch waves in prestressed phononic crystal plates. Frontiers in Materials, 6, p.74.

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CONFERENCE PAPERS

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97. Mathew, M., Ellenberg, A., Esola, S., **Bartoli, I.** and Kontsos, A., 2017. A Multiscale Multispectral Approach to Digital Image Correlation for SHM Applications. Structural Health Monitoring 2017

98. Furkan, M., Mao, Q., Livadiotis, S., Mazzotti, M., Aktan, A., Sumitro, S. and **Bartoli, I.**, 2017. Multipurpose wireless sensors for asset management and health monitoring of bridges.

In 8th international conference on structural health monitoring of intelligent infrastructure, Brisbane, Australia.

99. Aktan, E., **Bartoli, I.**, Moon, F., Balduccini, M., Sjoblom, K., Kontsos, A., Azari, H., Mazzotti, M., Braley, J., Young, C. and Ye, S., 2017, July. Virtual Laboratory for Leveraging Technology for Bridges and Constructed Systems. In International Conference on Experimental Vibration Analysis for Civil Engineering Structures (pp. 104-117).

100. Ellenberg, A., Mao, Q., Mazzotti, M., Young, C., Braley, J., Kontsos, A., Moon, F., and **Bartoli, I.** (2017). Bridge Deck Damage Identification through Image Processing. SEI Structures Congress. Denver, CO.

101. Mao, Q., Mazzotti, M., Young, C., Ellenberg, A., **Bartoli, I.**, Sjoblom, K., Aktan, E. (2017). Characterization and Evaluation of the substructure of Existing Bridges with Dynamic Testing Techniques. SEI Structures Congress. Denver, CO.

102. Bolhassani, M., Ghomi, A.T., Nejur, A., Furkan, M.O., **Bartoli, I.** and Akbarzadeh, M., 2018, July. Structural behavior of a cast-in-place funicular polyhedral concrete: Applied 3D graphic statics. In Proceedings of IASS Annual Symposia (Vol. 2018, No. 16, pp. 1-8). International Association for Shell and Spatial Structures (IASS).

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(EVACES 2019), Nanjing, China, 2019

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1. Kontsos, A., Mathew, F.M.D., Ellenberg, A.J. and **Bartoli, I.**, Drexel University, 2020. Multiscale deformation measurements leveraging tailorable and multispectral speckle patterns. U.S. Patent 10,845,187.

2. Kontsos, A., **Bartoli, I.** and Vanniamparambil, P.A., Drexel University, 2019. Integration of digital image correlation with acoustic emission. U.S. Patent 10,488,368.

3. Sjoblom, K., Mazzotti, M., Haas, C.N. and **Bartoli, I.**, Drexel University, 2018. Identification of water pipe material based on stress wave propagation. U.S. Patent 10,145,820.

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1. Viola, E. and **Bartoli, I.** "Problemi di stima delle costanti elastiche per l'identificazione dinamica di piastre ortotrope", Nota Tecnica N. 57 (a cura di: DISTART), DISTART, Bologna, 2002.

2. **Bartoli, I.**, Di Leo, A. and Viola, E. Identificazione delle costanti elastiche attraverso l'approccio Bayesiano. Nota Tecnica N. 83 (a cura di: DISTART), DISTART, Bologna, 2002.

3. Lanza di Scalea, F., **Bartoli, I.**, Rizzo, P. and McNamara, J., "On-line High-speed Rail Defect Detection," Technical Report DOT/FRA/ORD-04/16, Department of Transportation/Federal Railroad Administration, 2004.

4. Marzani, A., **Bartoli, I.** and Viola, E. "Transient ultrasonic guided waves in elastic waveguides immersed in vacuum: applications for a plate, a rod and an hollow cylinder", Technical Report n. 170, DISTART, University of Bologna, 2005.

5. Marzani, A., **Bartoli, I.** and Viola, E. "Hybrid formulation for modelling transient ultrasonic guided waves, Technical Report n. 169, DISTART, University of Bologna, 2005.

6. Marzani, A., Viola, E. and **Bartoli, I.** "Dispersion of acoustic waves in isotropic elastic cylindrical structures: rods and hollow cylinders, Technical Report n. 168, DISTART, University of Bologna, 2005.

7. Rizzo, P., Coccia, S., **Bartoli, I.** and Lanza di Scalea, F., "On-line High-speed Rail Defect Detection – Phase IV: Prototype Assembling and Field Testing," Technical Report No. SSRP-06/17 to the Federal Railroad Administration,, University of California, San Diego, 2006.

8. **Bartoli, I.** and Lanza di Scalea, F., "Health Monitoring of Prestressing Cables: Literature Review and Initial Results," Technical Report No. SSRP-06/24 to the California Department of Transportation, University of California, San Diego, 2006.

9. Coccia, S., **Bartoli, I.**, Lanza di Scalea, F. and Rizzo, P., "Non-contact Rail Defect Detection: First and Second Field Tests," Technical Report No. SSRP-07/15 to the Federal Railroad Administration, University of California, San Diego, 2007.

10. **Bartoli, I.**, Sorrivi, E., Lanza di Scalea, F., and Phillips, R., "Health Monitoring of Prestressing Cables: Literature Review and Wave Propagation Results," Technical Report No. SSRP-07/14 to the California Department of Transportation, University of California, San Diego, 2007.

11. Coccia, S., Phillips, R., **Bartoli, I.**, Salamone, S. and Lanza di Scalea, F., "Report of Third Field Test of UCSD/FRA Rail Defect Detection Prototype, Gettysburg, PA, March 17-21, 2008," Technical Report No. SSRP-08/02 to the Federal Railroad Administration, University of California, San Diego, 2008.

12. Coccia, S., **Bartoli, I.**, Phillips, R., Salamone, S. and Lanza di Scalea, F., "Non-contact rail defect detection: fourth field test," Technical Report No. Report No. SSRP-09/04 to the Federal Railroad Administration, University of California, San Diego, 2009.

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14. Lanza di Scalea, F., **Bartoli, I.**, Coccia, S., Salamone, S., and Phillips, R., "Automated Measurement of Stress in Continuous Welded Rail (CWR)," Letter Report to the Federal Railroad Administration, University of California, San Diego, 2009.

15. Coccia, S., **Bartoli, I.**, Phillips, R., Salamone, S. and Lanza di Scalea, F., "Noncontact Rail Defect Detection: Fourth Field Test," Technical Report No. SSRP-09/04 to the Federal Railroad Administration, University of California, San Diego, 2009.

16. Todd, M., Lanza di Scalea, F., Srivastava, A., Fasel, T. and **Bartoli, I.**, In-situ Adhesive Bond Assessment for Aerospace Structures, Final Technical Report to the Air Force Office of Scientific Research, contract no. FA9550-07-1-0016, 97 pages, August 2010.

RESEARCH SUPERVISION AND ADVISING

POST-DOCTORAL RESEARCH ASSOCIATES SUPERVISED

Dr. Matteo Mazzotti

Title: Post Doc

Expertise: Modeling of wave propagation with Finite and Boundary Element methods

Employment: September 2012 to September 2019: Full

Dr. Gokhan Karaman

Title: Post Doc

Expertise: Sound monitoring on operating movable structures

Employment: June 2014 to present

Current Funding: Part time

Dr. Mustafa Furkan

Title: Post Doc

Expertise: Use of wireless sensors for bridge rapid assessment

Employment: November 2020 to present

Current Funding: Part time

VISITING RESEARCHERS ADVISED

Dr. Yundong Li

Visiting Associate Professor, School of Electronic and Information Engineering, North China Univ. of Technology, Beijing

At Drexel from September 1, 2017 to August 31st, 2018

Dr. Dongwei Qiu

Visiting Associate Professor, Beijing University of Civil Engineering and Architecture No.1 Zhanlanguan Road, Xicheng District, Beijing, 100044, P. R. China

At Drexel from January 8, 2020 to December 4th, 2020

PH.D. STUDENTS SUPERVISED

Dr. Fuad Khan

Thesis Title: Multi-Sensing NDT Approaches for Inspection of Structural Component

Graduated in CAEE Department, 2015

Funding: Full

Dr. Qiang Mao

Thesis Title: Exploring Structural Identification as a Tool for Characterization of Bridge Substructures

Graduated in CAEE Department, 2019

Funding: Full

Dr. Shi Ye Thesis Title: Leveraging Technologies for Condition Assessment of Multi-Girder Highway Bridges

Graduated in CAEE Department, 2020

Funding: Full

Dr. Mustafa Furkhan

Thesis Title: Development and Validation of a Multipurpose Wireless Sensing System for Rapid and Objective Bridge Assessment

Graduated in CAEE Department, 2020

Funding: Full

Dr. Xiangang Lai

Thesis Title: Bridge Weigh in Motion: Challenges and Opportunities

Graduated in CAEE Department, 2021

Funding: Full

KIM Iqbal

Thesis Title: N/A

Started in August 2021, Funding: Full

Husain Ibrahaim

Thesis Title: N/A

Started in April 2021, Funding: Full

Stylianos Livadiotis

Thesis Title: N/A

Transferred to UT Austin after 2 years, Funding: Full

Husain Ibrahaim

Thesis Title: N/A

Started in April 2021, Funding: Full

PH.D. STUDENTS CO-SUPERVISED AND/OR SUPPORTED

Dr. Prashanth Vanniamparambil

Thesis Title: A Novel Framework for Cross-validated Nondestructive Evaluation using Acoustic Emission

Graduated in MEM Department, 2014, Primary Advisor: Dr. Antonios Kontsos

Funding: Partial

Dr. Andrew Ellenberg

Thesis Title: Structural health monitoring using unmanned aerial systems

Graduated in MEM Department, 2017, Primary Advisor: Dr. Antonios Kontsos

Funding: Full

Dr. Emily LeBlanc

Thesis Title: Explaining Actual Causation via Reasoning about Actions and Change

Graduated in Decision and Systems Sciences, 2019, Primary Advisor: Dr. Marcello Balduccini

Funding: Full

Dr. Emily LeBlanc

Thesis Title: Explaining Actual Causation via Reasoning about Actions and Change

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Funding: Full

Dr. Shane Esola

Thesis Title: Nondestructive Approach for Defect Detection in Hard Armor Protective Inserts

Graduated in MEM Department, 2020, Primary Advisor: Dr. Antonios Kontsos

Funding: MEM

Dr. Shakerur Ridwan

Thesis Title: Experimental Characterization of Enhanced Boiling and Evaporation Using IR Thermography

Graduated in MEM Department, 2020, Primary Advisor: Dr. Matthew McCarthy

Funding: Partial

Dr. Elias Ali

Thesis Title: Functionally Graded Thin-Walled Structural Systems under Extreme Loading

Graduated in CAEE Department, 2020, Primary Advisor: Dr. Yared Shifferaw

Funding: CAEE

Dr. Kermelos Woldeyes

Thesis Title: Assessing Wind Effects on Low-Rise Building Thin-Walled Structures

Graduated in CAEE Department, 2020, Primary Advisor: Dr. Yared Shifferaw

Funding: CAEE

Yao Wang

Thesis Title: N/A

ECE Department, Primary Advisor: Dr. Fei Lu

Funding: Partial

MASTER STUDENTS SUPERVISED

Vasiliki Sakagianni

Research Title: Structural Health Monitoring using wireless sensors

Graduated in CAEE Department

Charles Young

Research Title: Integration of Non-Destructive Testing Approaches with Structural Identification and Load Rating of Civil Infrastructure

Graduated in CAEE Department

Federico Manfroni

Research Title: Identification of substructure and unknown foundations in bridges, Graduated in 2016 (University of Bologna)

Antonio Musio

Research Title: Non-contact Infrared Thermography for bridge deck assessment, Graduated in 2016 (University of Bologna)

UNDERGRADUATE STUDENTS SUPERVISED

Neha Jaffry, Colin Henner, Mustafa Furkan, Michael Wilson, Kyle Jurgelewicz, Sofya Suntsova, Andrew Paladino, Stephen Bartal, Audrey Ryan, Matthew Morimoto, Aaron Goldberg, Spencer Kociba (STAR Scholar)

OTHER PH.D. THESIS AND EXAMINATION COMMITTEES

Dr. Andrew Bergan

Thesis Title: Damage Containment in Stitched Composite Structures for Aerospace Applications; Graduated in MEM; Advisors: Jonathan Awerbuch, Tein-Min Tan

Dr. Jefferson Cuadra

Thesis Title: A computational fracture induced approach of fracture-induced acoustic emission; Graduated in MEM; Advisors: Antonios Kontsos

Dr. Jeff Weidner

Thesis Title: Assessment and Implementation of Traditional and Multiple Model Structural Identification for a Complex, In-service Structure; Graduated in CAEE; Advisors: Franklin Moon

Dr. Nathaniel Dubbs

Thesis Title: Development, validation, and assessment of a multiple model structural identification method; Graduated in CAEE; Advisors: Franklin Moon

Dr. Matt Yarnold

Thesis Title: Temperature-Based Structural Identification and Health Monitoring for Long-Span Bridges; Graduated in CAEE; Advisors: Franklin Moon

Dr. Seyed Hossein Hosseini Nourzad

Thesis Title: Computational framework for modeling infrastructure network performance and vulnerability; Graduated in CAEE; Advisors: Anu Pradhan

Dr. Sukjoon Na

Thesis Title: Experimental and Numerical modeling of the Fracture Behavior of Pristine- Recycled High Density Polyethylene/Nanoclay; Composite Materials Graduated in CAEE; Advisors: Grace Hsuan, Sabrina Spatari

Dr. Mohammad Bolhassani

Thesis Title: Improvement of Seismic Performance of Ordinary Reinforced Partially Grouted Concrete Masonry Shear walls; Graduated in CAEE; Advisor: Ahmad Hamid

Dr. John DeVitis

Thesis Title: Development and Validation of a Self Contained Rapid Modal Testing Method For Population Based Condition Assessment Of Highway Bridges; Graduated in CAEE; Advisor: Franklin Moon

Dr. David Masceri

Thesis Title: Examination of Bridge Performance through the Extension of Simulation Modeling and Structural Identification to Large Populations of Structures; Graduated in CAEE; Advisor: Franklin Moon

Dr. Brian Wisner

Thesis Title: Damage Precursor Identification via Microstructure-sensitive Acoustic Emission;

Graduated in MEM; Advisors: Antonios Kontsos

Dr. Long Nguyen

Thesis Title: Life Cycle Environmental and Cost Assessments Incorporating Lifetime Prediction of High Density Polyethilene and alternatives in dranaige applications; Graduated in CAEE; Advisors: Sabrina Spatari and Grace Hsuan

Dr. Ben Cohen

PhD Proposal: Complex Sociotechnical Systems Approach to the Study and Design of Cross Sector Infrastructure Asset Management in an Urban Environment Advisor: Emin Aktan

Dr. Fadi Althoey

PhD Thesis: Understating and Mitigating Damage Development in Cementitious Materials Exposed to Sodium Chloride Advisor: Yaghoob Farnam

Mohammad Reza Falamarz-Sheikhabadi

PhD Thesis: Excitation, Model and Analysis Uncertainties in Seismic Assessment of Bridges Advisor: Aspasia Zerva

Dr. Peyman Aminpour

PhD Thesis: Multiscale Modeling of Thixotropy in Soft Clays Advisors: Kurt Sjoblom

Dr. Masoud Poul

PhD Thesis: Development of Viscoelastic PML and Deconvolution of Input Motion at Depth for Soil-Structure Interaction–Application to Dams Advisors: Aspasia Zerva

Dr. Melvin D Mathew

PhD Thesis: Speckle Patterns for Tailorable & Multiscale Optical Metrology Measurements Advisors: Antonios Kontsos

Dr. Siavash Vahidi

PhD Thesis: Effect of Photochemical and Mechanical Degradation Mechanisms on Polyethylene Advisors: Grace Hsuan

OTHER MS THESIS AND EXAMINATION COMMITTEES

Trevor Rabare Thesis Title: Stability of Perforated Cold-Formed Steel Beam-Columns Graduated in CAEE Advisors: Yared Shifferaw

Emre Alpaslan Thesis Title: Seismic Performance of Partially Grouted Reinforced Concrete Masonry Buildings Using 1/3-Scale Units Graduated in CAEE Advisors: Ahmad Hamid

Cihan Meral Thesis Title: Evaluation of Laser scanning technology for bridge inspection Graduated in CAEE Advisors: Anu Pradhan

Satish S. Rajaram Thesis Title: Use of Infrared Thermography in a Data Fusion Framework for Thermal and Damage Properties Quantification Advisors: Antonios Kontsos

SERVICE ACTIVITIES

- Civil Engineering Program Head
- Chair and member of faculty search committees for 5 new CAEE positions
- Member of the Senate committee on Research Scholarship & Creative activity (2020-Now)
- Member of the CAEE continuous quality improvement committee
- Member CAEE Department Graduate Committee (2013-Now)
- Member of one CAEE Tenure and Promotion Committee (2018)
- Advisor CAEE Department BS/MS Structural Engineering Program (2014-2015)
- Advisor Drexel University STAR Program
- Member Ultrasonic Technical Committee of the ASME NDE Division
- Member TRB Subcommittee AFF40(1) "Non-destructive Evaluation of Structures"
- Panelist National Science Foundation, CMMI division (2 panels)
- Principal investigator in charge of the renovation of the Mechanical and Structural Engineering Laboratory (renovation including new MTS hydraulic system, installation of 2 MTS universal testing frames, 2 high speed 5-kips actuators, refurbishing and installation of ANCO

shake table, relocation and installation of Instron testing frames and refurbishing of Tinius Olsen Testing frame.

- Panelist National Research Foundation (South Africa)
- Panelist Netherlands' research council
- Reviewer Journal of Intelligent Material Systems and Structures, Journal of bridge engineering, Journal of Sound and Vibration, Journal of the Acoustical Society of America, NDT and E International, Automation in Construction, Journal of Civil Structural Health Monitoring, Engineering Structures, International Journal of Structural Health Monitoring, Smart Materials and Structures, Structure and Infrastructure Engineering, Journal of Infrastructure Systems, Journal of Nondestructive Evaluation, Shock and Vibration, Ultrasonics, Mechanical Systems and Signal Processing, Experimental Mechanics, Structural Control and Health Monitoring.
- Guest Editor Special Issue for Mathematical Problems in Engineering: "New Strategies and Challenges in SHM for Aerospace and Civil Structures"

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Member of the American Society of Nondestructive Testing
- Member of the SPIE International Society for Optics and Photonics
- Member of the American Society of Civil Engineers
- Member of the ASCE/SEI - Methods of Monitoring Structural Performance Committee (recently joined)