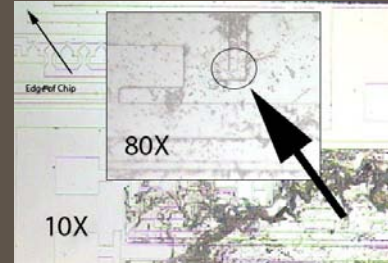
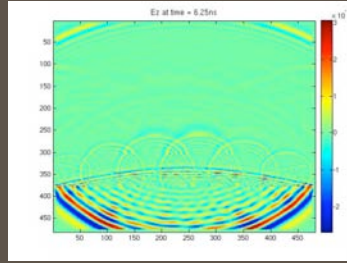
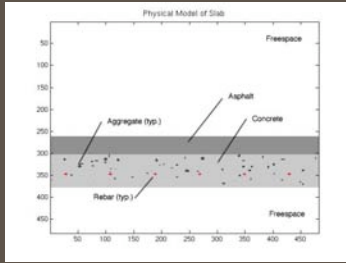


INTELLIGENT DIAGNOSTICS for Aging Civil Infrastructure an NSF - funded IGERT



IGERT Doctoral Fellowships

Provide a \$30,000 annual stipend plus tuition for two years of graduate study with additional years supported through related research or teaching assistantships

Undetected damage to steel buildings caused by the 1989 Loma Prieta Earthquake was discovered only after the 1994 Northridge Earthquake.

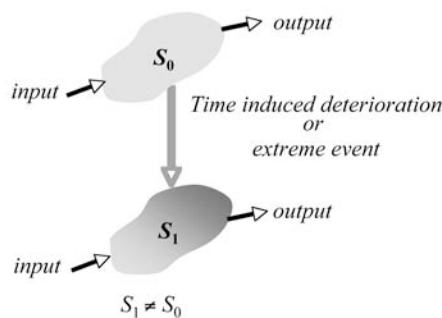
Undetected leaks in the Puerto Rico water system steal almost 50% of the island's drinking water before it reaches the tap.

Undetected precursors to deterioration and damage and subsequent postponed maintenance have resulted in maintenance deficiencies of US roadways and bridges costing \$92 billion.

Each disaster is another reminder to policy makers about the need to engage technical expertise in defining diagnostic criteria and practices. The 1906 San Francisco Earthquake was an impetus to improved design codes. Yet despite decades of learning about how systems respond to severe ground motion and how to design structures to be more resilient, methods to diagnose health and policies to remedy compromised integrity are needed.

Doctoral research experience with experts in a novel two-campus interdisciplinary research and education program:

- civil engineering
- structural engineering
- computer science
- signal processing
- computer engineering
- material science
- electrical engineering
- public policy



The INTELLIGENT DIAGNOSTICS IGERT integrates:

- Multidisciplinary Coursework
- TestBED & Real World Data
- Industry Internships
- Research Center Collaboration
- Multicultural Education

Addressing:

- Technology Challenges
- Global Workforce Needs
- Urban & Public Policy Needs

To train LEADERS in:

- Technical and Societal Implications of Intelligent Diagnostics for Aging Civil Infrastructure

IGERT is funded by the National Science Foundation Program:

- Integrated Graduate Education & Research Traineeship
- NSF DGE-0654176

IGERT Doctoral Fellowships in INTELLIGENT DIAGNOSTICS

www.igert-id.neu.edu

Coursework Includes

- † Diagnostics Multiphysics
- † Identification & Damage Characterization
- † Social, Economic, & Political Policy
- † Non-Destructive Evaluation Sensors
- † Inverse Problems
- † Materials & Fracture

Additional Activities

- † **ID Urban Studio:** Case-based presentation of aging infrastructure problems
- † **ID Challenge:** Benchmark problems that provide a common basis for analytical evaluation
- † **ID Round Table:** Seminar engaging all faculty & students

Contact

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IGERT Faculty Leadership:
Wadia-Fascetti, Bernal, Bluestone, Padilla, Rappaport, Tadmor, Bosso

Representative Research Projects

- † Data Driven Techniques for Damage Detection
- † Disaster Specific Fault-Detection and Reconfiguration
- † Electromagnetic Remote Sensing of Underground Contamination Characterization
- † Electromagnetic and Mechanical Wave Fusion for Rapid Non-destructive High Resolution Diagnostic
- † Fault Detection in Underground Systems
- † Passive Self-Diagnosis w/ Massively Networked Microsensors
- † Null Space Techniques for Fault Localization
- † Time Reversal in Structural Diagnostics
- † Plate Structure Fault Detection using Lamb Waves

Connections with Research Centers

IGERT is connected to two cross institutional NSF funded research centers: the Engineering Research Center (ERC) for Subsurface Sensing and Imaging systems, and the Nanoscale Science and engineering Center (NSEC) for High-rate Nanomanufacturing.



Advisors from Multi-Disciplines

Students will carry out their dissertation research under the supervision and guidance of a team of advisors containing members from no less than two departments / disciplines. Graduates will be prepared for careers in research, academe, or industry.

The INTELLIGENT DIAGNOSTICS IGERT engages 28 faculty from 9 departments and 2 universities.

Funding Opportunity

U.S. Citizens and Permanent Residents are eligible for IGERT Fellowships.

Applicants should apply to the Graduate School and select a home department (Civil & Environmental, Mechanical & Industrial, Computer & Electrical, Computer Science, Physics or Mathematics) most closely related to existing background and education. A statement of purpose must be included that describes interdisciplinary research interests in the area of

INTELLIGENT DIAGNOSTICS

Applicants are encouraged to include GRE scores. Applicants holding BS degrees with the intention of pursuing the Ph.D. are encouraged to apply directly to the Ph.D. and should note their intentions for the IGERT in their applications.

Apply to graduate school at:

www.grad.neu.edu

or

grad.uprm.edu

IGERT Doctoral Fellowships in INTELLIGENT DIAGNOSTICS

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