

Models of Industrial and National Lab Research

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What is NIST?

A non-regulatory federal agency within the U.S. Department of Commerce.

Founded in 1901

NIST's mission is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. NIST carries out its mission in three cooperative programs:

- the NIST Laboratories
- The Baldrige National Quality Program
- the Manufacturing Extension Partnership

NIST Laboratories

- Building and Fire Research - quality and productivity in U.S. construction.
- Chemical Science and Technology - develops the chemical, biochemical, and chemical engineering measurements, data, models, and reference standards
- Electronics and Electrical Engineering - provides the fundamental basis for all electrical measurements in the United States.
- Information Technology - develops test methods and standards for information technologies with a focus on usability, reliability and security of computers and computer networks.

NIST Laboratories

- Manufacturing Engineering - measurements and standards, both dimensional and mechanical. MEL also maintains the basic units for measuring mass and length in the United States.
- Materials Science Engineering - materials measurement and standards and reference materials in ceramics, polymers, metallurgy, neutron characterization, and materials reliability.
- Physics Laboratory – provides measurement services and research for electronic, optical and radiation technology.
- Technology Services- provides support for NIST calibrations, Standard Reference Materials, Standard Reference Data, and Weights and Measures; coordination of documentary standards activities.

Kinds of Work?

- NIST focus is on evaluation
- But to evaluate research, you have to understand it
- Therefore, we do research in the science + research to evaluate the science
- Example: we have 2 Nobel Prize winners at NIST

Who picks the work I do?

- Personal research goals need to fit within the “evaluation” mission
- Lots of freedom in selecting projects
 - Can ask for internal funding for a new effort
 - Can choose to work on an existing effort
 - Can obtain external funding for interesting work
 - Defense Advanced Research Projects Agency (DARPA)
 - Advanced Research and Development Agency (ARDA)
 - Army Programs
 - Department of Justice
 - Opportunities to work on projects across laboratories
- Some projects are mandated by Congress
 - Voting
 - Security

Who do I work with?

- Permanent NIST staff –mostly master degrees/ Ph.D.
- Temporary staff
 - Students at all levels – high school to Ph.D candidates
 - Students doing internships
 - Postdocs
 - Faculty on sabbatical here
- Researchers involved in NIST evaluation programs

What do I do?

- Only research

Current Snapshot

- Human-robot interaction
 - Work with
 - 1 person in my lab
 - 10 + in another lab
 - Researchers doing robot search and rescue
 - 2 students currently – 1 more coming
 - Funded through DARPA
 - 2 papers published this year, working on three others
- Interactive Systems Evaluations (3 projects)
 - Work with
 - 1 person in another lab (project 1) + researchers
 - 6 people in my lab (project 2) + researchers
 - 3 people in my lab (project 3) + researchers
 - 2 students
 - Funded through ARDA and DARPA
 - 1 paper published this year
 - Will be writing another soon
- Been here – 6 years
 - Worked 3 years of that at another agency
- Worked on 4 other projects
 - 1 externally funded, 3 internal
 - 2 that I started

Working for the Government?

- Pros
 - Lots of smart people
 - Like being a college professor without writing grants
 - Perks because of being govt.
 - Opportunities for details at other government agencies
 - Employment is secure
 - Can teach courses at local universities
 - Opportunity to take courses (both technical and personal)
- Cons
 - No stock options
 - Government regulations are sometimes somewhat arbitrary
 - And there is paperwork – but now lots of it is electronic!
 - Some have old view of “government worker”
 - Not always the “highest paid”
 - Budget has to be approved by Congress
 - No consulting allowed
 - Vacation allowance is still on old fashion schedule