

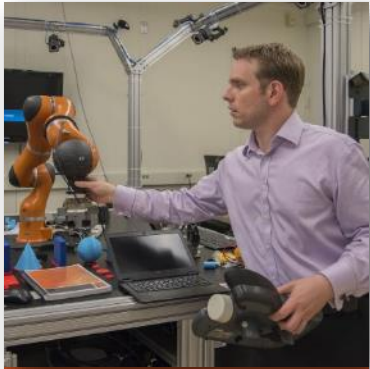
NIST and Artificial Intelligence

Dr. James K. Olthoff

Acting Associate Director for Laboratory Programs

June 5, 2018

Programmatic Priorities



Advanced
Manufacturing



Cybersecurity



Disaster
Resilience



© Matt DeLorme

Engineering
Biology



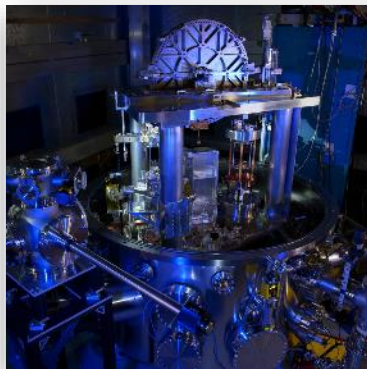
Internet of
Things



Documentary
Standards



Technology
Transfer



Measurement
Dissemination



Quantum
Science



Artificial
Intelligence

Artificial Intelligence as a Strategic Priority

Emerging applications

Build confidence and trust



Why AI Now?

1950's

“Artificial Intelligence” coined by Dartmouth professor J. McCarthy

Today

Confluence of **big data**, advanced **algorithms**, and **computing power**

In today's landscape, AI is essential to our national security and economic health

TOM SIMONITE BUSINESS 09.08.17 07:00 AM
**FOR SUPERPOWERS,
ARTIFICIAL INTELLIGENCE
FUELS NEW GLOBAL ARMS RACE**

The algorithm kingdom

China may match or beat America in AI

Its deep pool of data may let it lead in artificial intelligence

JUN 22, 2017 @ 12:35 AM 14,350

The Little Black Book of Billionaire S

**Artificial Intelligence Will Enable 38% Profit Gains
By 2035**

*Most Americans See Artificial
Intelligence as a Threat to
Jobs (Just Not Theirs)*

The WorldPost • Opinion

**Weekend roundup: Whoever
dominates AI will put their stamp on
the social order**

By Nathan Gardels October 20, 2017

Our Vision for Success in AI:

NIST's investigation and deployment of data and AI technologies builds confidence and trust that drives new measurement research outcomes and an expanded commercial marketplace

October 2017 VCAT Meeting

Why NIST?

As a trusted measurement science organization, NIST has a bedrock of relevant expertise across all of its laboratories, touching virtually all sectors

- Data analytics and models
- Taxonomy development
- Challenge problems
- Documentary standards
- Smart manufacturing
- Natural language processing
- Reference datasets
- Image recognition algorithms
- Advanced materials modeling
- Cybersecurity and privacy
- Statistical engineering
- Bioengineering, ...



Transportation



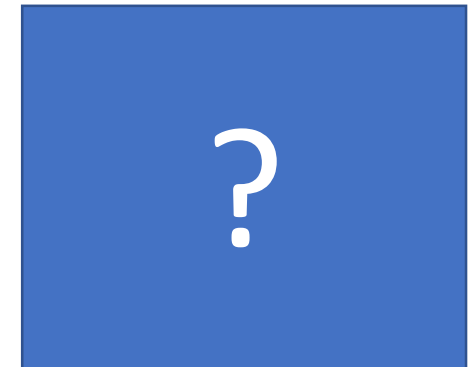
Manufacturing



Healthcare



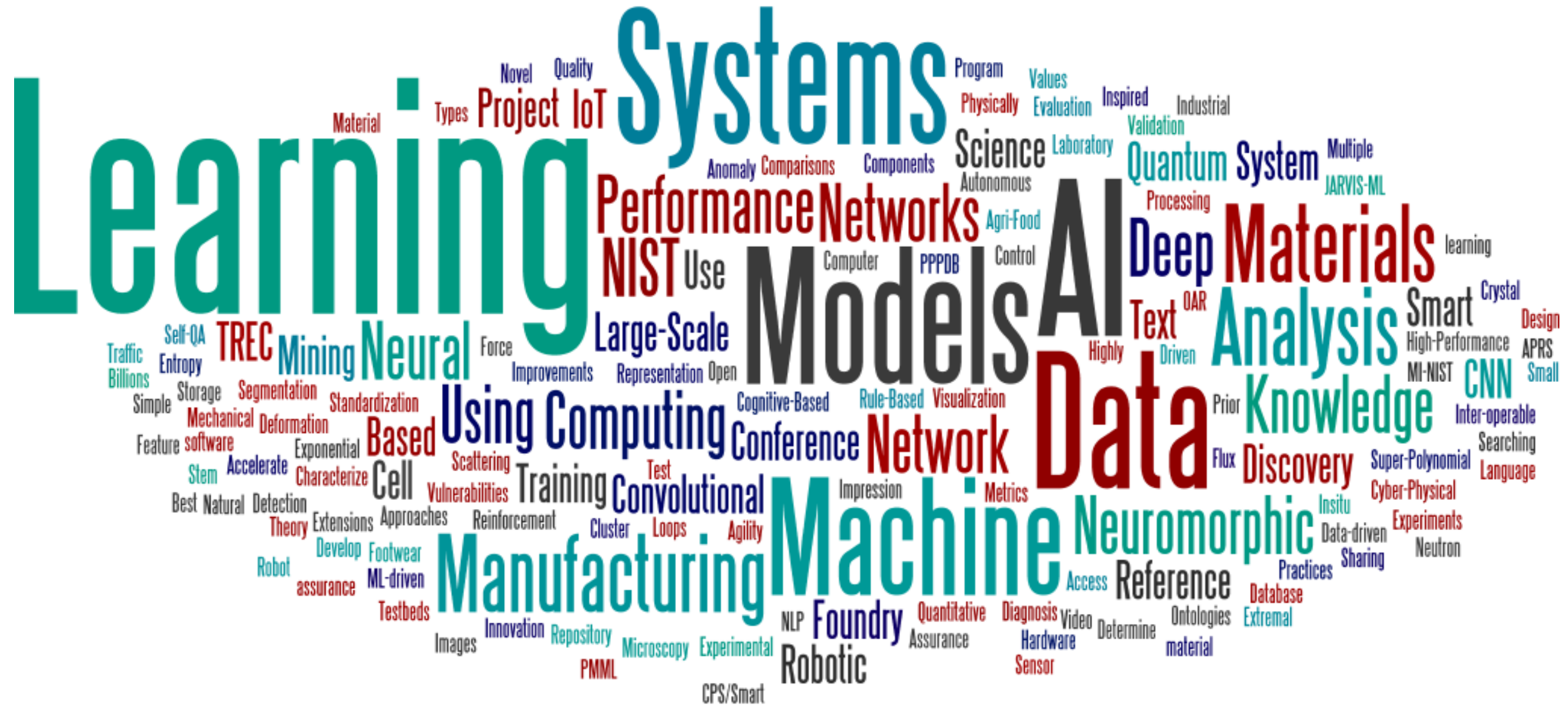
Finance



Future topics

Credit: Alpha Stock Images

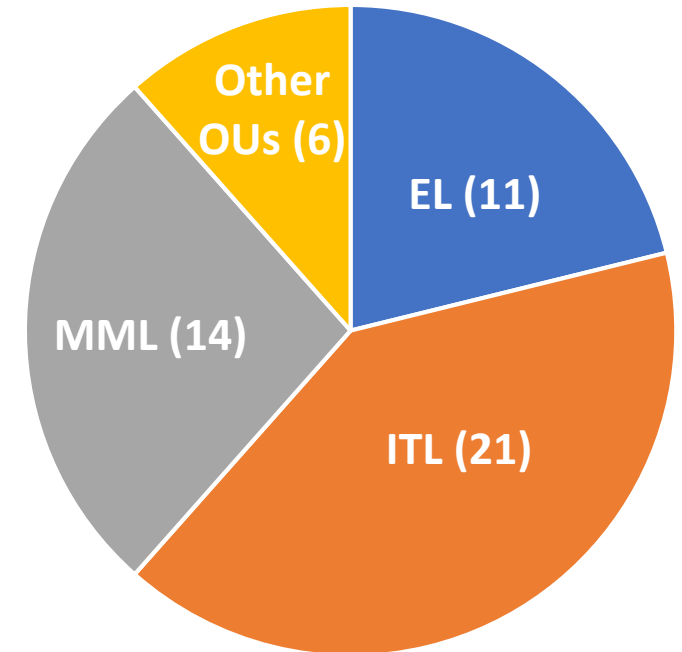
AI Projects Across NIST



AI Community of Interest



ML/AI – Related Projects
in NIST Laboratories (#)



May 17, 2018: Rapid Fire Speaker Session Featured 44 Projects

NIST will:

- (1) build new AI and data methods, for example by developing curated datasets and performance metrics to train, test, and quantify AI systems, and
- (2) vet and demonstrate the use of data and AI techniques on research problems faced in NIST's own laboratory programs

Foundational
Research

Applications of AI

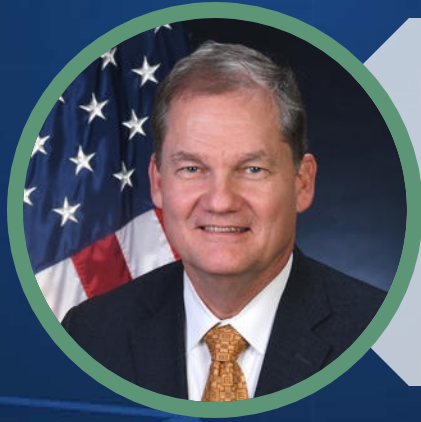
Standards

Speakers



Jim Kurose

White House Office of Science and
Technology Policy



Chuck Romine

Director, NIST Information Technology
Laboratory



Eric Lin

Director, NIST Material Measurement
Laboratory