National Security Agency | Central Security Service

RESEARCH DIRECTORATE

Advancing Intelligence Through Science

WHAT WE DO

The NSA/CSS Research Directorate (RES) advances US intelligence and national security capabilities by inventing, developing, and applying advancements in science and emerging technologies to NSA's signals intelligence (SIGINT) and cybersecurity missions. It is also the largest in-house research organization in the Intelligence Community (IC), with experts in fields such as mathematics, computer science, engineering, cybersecurity, physics, neuroscience, and linguistics.

The goal of RES is to develop new and innovative techniques and technologies to support and enable NSA missions, including the joint-authority missions of the IC and Department of Defense.

WHO WE ARE

RES is home to a highly technical and talented workforce that performs cutting-edge research and creates breakthroughs in mathematics, computer science, engineering, cybersecurity, physics, neuroscience, and linguistics that lead to creative solutions to NSA's most challenging problems.

RES engages with leading industries, universities, and national laboratories to both advance core competencies and leverage work in overlapping disciplines. RES recruits exceptional scientists with world-class skills in fields related to the emerging technologies it explores, and it is also the patent leader across the IC.

Maintaining the Competitive Edge

CRYPTO MATHEMATICS

We maintain world-class expertise in cryptologic mathematics in support of NSA's SIGINT and cybersecurity missions by designing strong cryptography, creating powerful mathematical tools, and advancing foundational mathematics and statistics.

SCIENCE OF ANALYSIS

We bring increased depth, resilience, and scale to the analytic methods created for NSA's SIGINT and cybersecurity missions. RES expands NSA's in-house development of data science, machine learning, and scalable analytic techniques to draw actionable intelligence from raw data. This focus area is broad, spanning foundational research in human language technologies and computer vision, to large-scale graph analytics, to human-machine teaming with artificial intelligence agents.

COLLECTION & EXPLOITATION TECHNIQUES & SYSTEMS

We gain and retain persistent access to our adversaries' communication while ensuring that our Nation's critical communications remain secure by utilizing the expertise of computer scientists, electrical engineers, computer engineers, mathematicians, and physicists.

FUTURE COMPUTING

We conduct mission-relevant research in next- and next-next generation computing technologies, architectures, prototype systems, and computational methods. RES accelerates the timeline for implementing future computing system technologies by researching innovations in computing, hardware, software, and architecture to improve system resilience, energy efficiency, and productivity. RES performs fundamental research to invent new memory and logic that will take us beyond Moore's Law and into the quantum information sciences era.

CYBERSECURITY

We perform world-class research in cybersecurity operations that result in practical national security solutions by developing long-term investments and partnerships with national level leaders in operating systems, chip manufacturing, software assurance, automation, artificial intelligence, and network technologies. This research area focuses on eliminating broad classes of vulnerabilities, advancing security in standards, assuring the safety and security of emerging technologies, advancing the adoption of high-confidence tools and techniques, advancing human-machine teaming, and creating novel cybersecurity effects that provide an advantage to the defender.

FIND OUT MORE

The Next Wave is an NSA publication on emerging technologies, available at www.nsa.gov/thenextwave.

CONTACT US

Internships and job opportunities: researchjobs@nsa.gov.

For all other inquiries: research_partnership@nsa.gov.