AUTOMATED SCIENCE at CMU

CHANGE HOW SCIENCE IS DONE AND ACCELERATE CRITICAL BREAKTHROUGHS

For generations, there has been a formula for discovery. An idea leads to an experiment design. The experiment is conducted — often involving manual tasks that are repeated over and over. Data is recorded and analyzed. Insight often comes only after dead ends are explored, failures overcome and significant time and resources are invested. The process can take years, even decades.

At Carnegie Mellon University, we are throwing out this dated, inefficient paradigm to accelerate discovery. By radically changing how science is done, we can better answer extremely complex questions. Can we cure cancer before it starts? Double the efficiency of solar panels? Discover new drugs 10 times faster? The key lies in partnering computation, robotics and data analytics with innovative scientific research, which will make the discovery process more transparent, less prone to error and more reproducible — and it will accelerate innovation.

By automating the process of experimentation and data analysis in a cloud lab, CMU scientists and researchers will be able to focus on asking tough questions and designing breakthrough experiments that lead to world-changing advancements.
YOU CAN HELP CARNEGIE MELLON  
transform SCIENTIFIC RESEARCH:

MORE POWERFUL RESEARCH  
A centralized cloud lab facility will unlock the full potential of faculty and students to conduct groundbreaking research without the restraints of traditional lab space.

GROUNDBREAKING COLLABORATION  
Putting all research data on a single platform will allow researchers and scientists to combine datasets and collaborate in new, innovative ways and facilitate breakthroughs.

UNPARALLELED SCIENTIFIC EDUCATION  
Interdisciplinary programs that train students in the diverse aspects of research automation — physical sciences, robotics and large-scale data analysis — will provide undergraduate and graduate students with a competitive advantage in their fields.

MORE ACCESSIBLE EQUIPMENT  
A variety of advanced research instrumentation will be available to a broader community of researchers, meaning scientists will be less constrained by large budgetary requirements for individual instrument purchases.

CENTRALIZED FACILITIES  
Open to all researchers, automated cloud labs will allow CMU to make the most productive, efficient use of equipment and instrumentation and increase the range of experiments being conducted at the same time. By reducing downtime for instruments and the need for laboratory space, we will free up resources for investments in our people.

AUTOMATED LABS ARE THE FUTURE, BUT THEY WILL NOT RUN THEMSELVES.  
Trained researchers must be able to design, maintain and program automated instruments. They need firm grounding in the sciences to devise and interpret automated experiments. They will require advanced training to collect and analyze vast amounts of data.

With our strengths in technology and foundational sciences, there is no better place for training the scientists of the future than Carnegie Mellon.