

AIR FORCE RESEARCH LABORATORY

Air Force Research Laboratory, with headquarters at Wright-Patterson Air Force Base, Ohio, was created in October 1997. The laboratory was formed through the consolidation of four former Air Force laboratories and the Air Force Office of Scientific Research. (http://en.wikipedia.org/wiki/Air_Force_Research_Laboratory)

Mission

AFRL's mission is leading the discovery, development and integration of affordable warfighting technologies for America's aerospace forces. It is a full-spectrum laboratory, responsible for planning and executing the Air Force' science and technology program. AFRL leads a worldwide government, industry and academia partnership in the discovery, development and delivery of a wide range of revolutionary technology. The laboratory provides leading-edge warfighting capabilities keeping our air, space and cyberspace forces the world's best.

Personnel and Resources

The lab employs approximately 5,800 government people, including about 1,400 military and 4,400 civilian personnel. It is responsible for the Air Force's science and technology budget of nearly \$2 billion including: basic research, applied research, advanced technology development and an additional \$1.7 billion from AFRL customers.

Organization

AFRL accomplishes its mission through nine technology directorates located throughout the United States, the Air Force Office of Scientific Research and a central staff. For additional information, please visit <http://www.wpafb.af.mil/AFRL/> and click the link to the AFRL video under the title: AFRL's mission is to "create the future."

Tec^Edge Innovation & Collaboration Center as the Summer Research Facility

The projects for AFRL will be conducted at the Tec^Edge ICC "Discovery Lab". Working in partnership with its foundational stakeholder, the Air Force Research Laboratory, Wright Brothers Institute operates as a neutral enabler and place for multidisciplinary joint (government, industry, and academia) teams to come together in intense collaborations focusing on complex problems or challenges. The outcome of these collaborations can range from a better and more complete understanding of a problem to the rapid development of actual prototypes. WBI leverages this work for its other foundational stakeholders to stimulate and support the growth of technology companies, to foster technology transition and transfer to commercial endeavors, and to enhance science and math educational opportunities. Among those efforts include the research and adaptation of Air Force Research Lab defense technologies for non-defense applications such as Homeland Security. Many of these AFRL technologies are finding their way into homeland security applications through AFRL funded technology projects at the Tec^Edge to include the Academic Pipeline Summer-at-the-Edge (Figure 1).

Last summer, over 60 students participated on-site at Tec^Edge "Discovery Lab" in one of 12 technology innovation projects in teams of 4-5 students working together under the technical leadership of a project lead / senior mentor (<http://www.wbi-icc.com/news/>). The Tec^Edge is an innovation environment in which AFRL funds technical projects requiring the elbow-to-elbow

collaboration of government, industry, and university researchers tackling some of the nation's most urgent defense and security challenges. As result, the student, if selected, will have an opportunity to see research relevant to homeland security from the perspective of government, industry, and academia.



Figure 1: Summer-at-the-Edge (SATE 2009) Kick Off

The multi-disciplinary nature of the Tec^Edge that AFRL established means that the student will not only get intense hands-on experience in their chosen field of study but also be exposed to the career broadening experience of seeing how other science and technology disciplines contribute to homeland security innovations. **Dr Rob Williams (robert.williams@wpafb.af.mil) is the research director for the Tec^Edge Discovery Lab and POC for the DHS summer projects.**

Start / End Dates:

The goal is to accept students from mid-May through mid-June with departure through September. Because the Tec^Edge takes a project-team approach to research, the goal is to build teams around students arriving roughly during the same time periods to preserve some continuity. A kickoff meeting is typically scheduled for early to mid-June.

A brief plan how students will be integrated (both work and social):

Once an offer is extended, the student will be encouraged to contact the sponsoring researcher and for the sponsoring researcher to provide background material and ongoing communication to help bring the student up to speed as much as is reasonably possible.

All starts will be on a Monday to include a period of orientation which will cover required safety, cyber security and other student events and start information. Safety and security is taken very seriously. The student is expected to act responsibly in all their dealings inside and outside the

Tec^Edge during their summer stay. AFRL and Tec^Edge Discovery Lab combined host over 600 students every summer. In addition to lectures, there is a series of guest speakers, summer students' lectures, socials, and networking opportunities planned in addition to the research (Figure 2).



Figure 2: Student Research in an Intensely Collaborative Environment

Work hours are from 8:00 AM – 5:00 PM. The specifics of when a student arrives and departs outside of this baseline should be agreed upon with the project lead/senior mentor and coordinated with the Tec^Edge research director. Key attribute of a Summer-at-the-Edge is the opportunity to conduct research as part of a team and so work schedules should be coordinated to maximize team collaborations.

The research will be conducted at the Tec^Edge Innovation & Collaboration Center situated outside the fence line of Wright Patterson Air Force Base. Wright Patterson AFB is located in Dayton, Ohio with two other large cities, Columbus and Cincinnati an hour's drive away.

Lodging:

Lodging will be facilitated through a process established by the AFRL Academic Pipeline program. Depending on the date of arrival, housing arrangement have been made with a local university, otherwise students have elected to stay in one of the area extended stay hotels.

Research Paper/Poster:

Tec^Edge traditionally requires an oral presentation at the conclusion of a summer assignment and participation in the end-of-summer Open House.