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Associate Professor, Department of Physics
Director Undergraduate Research & Experiential Learning, CoSM
Wright State University
Who am I?
Why apply?

- Future Job?
- Graduate School?
- Resume Enhancement
- Networking
- Expand your world
When to apply & should you apply?

Position description might indicate this.

Most programs want rising seniors, than juniors.

Where are in your degree program? Relevant courses are important

Other issues include GPA, experience, references

The Rule of 3

You have to take charge and pursue these on your own!

Advice

When?

Should you?
What opportunities are out there?

First, let’s talk about

National Science Foundation

Research Experience for Undergraduates
NSF REU’s

NSF- Summer Research Experiences For Undergraduates In Neuroscience at the University of Missouri

UC San Diego, Scripps Institution of Oceanography Student Undergraduate Research Experience (SURF)

Georgia Tech SURE Program in Robotics
NSF REU’s

University of Michigan Chemistry REU Program

Physics REU at the University of Notre Dame

Duke University Research Experience For Undergraduates Program In Estuarine & Coastal Marine Sciences

12/9/2015
NSF REU’s

• The National Science Foundation Research Experience for Undergraduates Program
• http://www.nsf.gov/crssprgm/reu/reu_search.jsp
• For all STEM Fields!!!
• Spend 8-10 weeks during the summer at another academic institution doing research.
• Receive a stipend, housing, travel funding.
• Target audience is (most of the time) students finishing their junior year.
• Apply early winter every year.
1. Start searching here.
3. Note that every STEM discipline is present here.
4. Apply.
5. WSU students have gone to REU programs at Cornell, Harvard, Utah, and Purdue and more!
Each application will typically require

- Transcript
  - Highly Competitive Programs are looking for 3.5+ GPAs
  - HOWEVER, some programs are looking for 3.0 – 3.5 GPAs
- Academic Resume
  - List all relevant upper level course work
  - Relevant software skills
  - Any course projects
- Personal Statement
  - Be concise, avoid clichés and drama…
  - Be memorable though and tell your story
  - Explain how the REU is going to advance your career
- Reference Letters (2-3)
  - Professors that you have worked with or taken class with
  - No high school teachers
  - Only relevant employers, not the person who supervised your paper route.
Let’s talk about some local opportunities…
• This program posthumously honors Dr. Repperger, who mentored many young people during his 35 year research career with our organization, by providing research opportunities for students to work in one of our facilities under the mentorship of an Air Force scientist. Each of these scientists has been hand-selected to mentor because of their technical knowledge, experience and willingness to help science and engineering students enhance their learning experience through participation in an actual Air Force research project.

• If selected for one of the projects, you will have temporary summer employment through our contract with the Oak Ridge Institute for Science and Education (ORISE) to participate in this 10-week research internship at one of our two research locations; Dayton, Ohio or San Antonio, Texas. Along with gaining first-hand research experience, you’ll learn the inner workings of an operational laboratory and develop contacts and friendships that will last a lifetime.
### REPPERGER RESEARCH INTERN PROGRAM

#### INFORMATION AND APPLICATION INSTRUCTIONS

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<tr>
<th><strong>Program Dates:</strong></th>
<th>June 1 – August 7, 2015 (arrive May 31 – depart August 8)</th>
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<tr>
<td><strong>Program Hours:</strong></td>
<td>40 hours per week Monday-Friday (actual hours set by mentor)</td>
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<td><strong>Stipend:</strong></td>
<td>$12,000 for 10-week period</td>
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<td><strong>Lodging:</strong></td>
<td>Student’s expense - Click on items below for lodging options:</td>
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<td></td>
<td>- Wright State University Summer Housing</td>
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<td>- Apartment Finder</td>
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<td>- Local Hotel Search</td>
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<td><strong>Research Locations:</strong></td>
<td>Wright-Patterson AFB, Dayton, OH or Ft Sam Houston, San Antonio, TX</td>
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<td><strong>Number of Positions:</strong></td>
<td>Up to 10 students will be selected for participation</td>
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<td><strong>Requirement:</strong></td>
<td>- Graduate students and undergraduate juniors and seniors.</td>
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<td>- Must be a U.S. citizen</td>
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<td><strong>Final Report:</strong></td>
<td>PowerPoint presentation or poster at end of internship</td>
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<td><strong>Application Deadline:</strong></td>
<td>February 27, 2015 at 5:00 p.m. EST</td>
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#### Application:

1. Application form
2. Curriculum Vitae
3. Copy of Transcript (unofficial is okay)
4. Copy of proof of U.S. citizenship
5. Letter of recommendation from current faculty adviser

#### Proof of U.S. Citizenship (submit 1 of the items shown on list with application):

- Copy of U.S. Passport
- Copy of Certified birth certificate issued by the city, county or state of birth
- Copy of Consular Report of Birth (of U.S. citizen) Abroad or Certification of Birth
- Copy of Naturalization Certificate
- Copy of Certificate of Citizenship

**Application Submission Instructions**

Send: (1) application form (save as your last name), (2) Curriculum Vitae, (3) copy of transcript, (4) copy of proof of U.S. citizenship, and (5) signed letter of recommendation from adviser by email to: **711th HPW Chief Scientist’s Office at 711th.hpw.chiefscientist@us.af.mil**.

**NOTE:** Be sure to indicate on the application the project for which you are applying. If more than one, please indicate your priority by entering the research project number in the appropriate choice box.

#### Computer Access

Students selected will be required to undergo a National Agency Check prior to being granted access to government computer systems.

#### Notification:

Students selected for the program will receive a fellowship with the Oak Ridge Institute for Science and Education (ORISE) to perform intern duties in the 711th Human Performance Wing.

#### For More Info:

Mike Reynolds, 937-255-7629, mike.reynolds.ctr@us.af.mil
AFRL Repperger Research Program

TE&V TECHNIQUES FOR AUTONOMOUS AGENTS

PROJECT SYNOPSIS: In recent years, the Air Force has emphasized the need for increased use of autonomous systems. Numerous obstacles remain before such systems can be deployed. Autonomous systems are fundamentally complex, with large and non-deterministic decision spaces that are difficult to correctly design and implement. This also makes them difficult to analyze and test for factors such as safety, resulting in significant barriers to system certification. To address these problems in a cognitive modeling scope, this effort will seek to expand and apply TE&V techniques to human-inspired autonomous agents being developed by AFRL. The intern will research and develop a model-to-model translation capability that will convert agents expressed in formal behavior models into temporal logic or colored petri nets. Behavior models translated into temporal logic will be analyzable using the Temporal Logic of Actions (TLa*) Toolbox. Behavior models translated into colored petri nets will be analyzable using CPTools. The model-to-model translation capability will be developed in the Generic Modeling Environment (GME) meta-modeling framework. Participation in this project will allow intern to: (1) acquire meta-modeling experience, and (2) contribute to the early development of new methods for test, evaluation, verification, and validation (TE&V) of cognitive models and agents.

STUDENT LEVEL / DISCIPLINE NEEDED:
Bachelors/Psychology
PhD/Cognitive Psychology

RESEARCH LOCATION: Cognitive Models and Agents Branch, Wright-Patterson AFB, Dayton, OH

ADAPTIVE COGNITIVE MODELS THAT LEARN FROM INSTRUCTION

PROJECT SYNOPSIS: Humans are often capable of strategically adapting to dynamic, non-stationary environments. In environments where we want rapid adaptation, we instruct humans how to perform the task at hand. A current limitation in computational cognitive process models is their ability to receive instruction and operate on the basis of that instruction while also adapting strategies derived from the instructions to nuanced environments. We are working toward developing models capable of learning from experience as well as operating from instruction. The goal is a model capable of doing both simultaneously.

STUDENT LEVEL / DISCIPLINE NEEDED:
Bachelor's, Master's or PhD/ Cognitive Science, Computer Science or Mathematics

RESEARCH LOCATION: Cognitive Models and Agents Branch, Wright-Patterson AFB, Dayton, OH

INVESTIGATION OF BIOLOGICAL RESPONSE TO ELECTROMAGNETIC EXPOSURE

PROJECT SYNOPSIS: Understanding the mechanism(s) underlying the interaction of electromagnetic (laser, thermal, short-pulse electric) energies with biological systems is integral for development of novel technologies provided by interfacing these energies with biology. This project focuses on understanding the subtle impacts of electromagnetic energy on cells, with a particular focus on the plasma membrane. Depending on the interests of the researcher, advanced optical imaging techniques such as coherent Raman scattering, high-speed imaging, stimulated emission depletion (STED), or confocal or multi-photon microscopy may be used to observe the effects on cells from neuron stimulation by electromagnetic sources. Additionally, wave propagation in neurons may be explored with laser trapping and fluorescence correlation. Candidates with expertise in neuroscience seeking to expand their techniques repertoire by combining optical approaches with single cell events, such as patch clamp for investigation of their observed cell response phenomenon, are particularly desired, as well as those individuals with demonstrated experience with novel optical sensing and imaging applications.

STUDENT LEVEL / DISCIPLINE NEEDED:
Bachelor’s Master’s or PhD/ Biomedical Engineering, Neural Science or Biochemistry

RESEARCH LOCATION: Optical Radiation Bioeffects Branch, Fort Sam Houston, San Antonio, TX

ENHANCED COMMUNICATION IN AUTOMATION-RICH ENVIRONMENTS

PROJECT SYNOPSIS: Tomorrow's AF will require operators to interact with many sources of automation from autonomous agents like intelligent route planners and cyber security bots to fully autonomous systems like UAVs and surveillance satellites. With this increased level of automation comes an increased need for effective communication between operators and their machine teammates. The current project will focus on designing speech-based agent interfaces that take advantage of natural human-human communication strategies to facilitate increased situation awareness in automation-rich environments. Aspects of the project might include improving spoken dialog systems for multiple (semi)-autonomous agents to convey information about an agent’s identity and state both explicitly through speech and implicitly through emblematic voice characteristics (i.e. identity, sex, accent, urgency, confidence, etc.). Secondly, the project could focus on developing techniques to integrate agent-based communications, whether through voice or chat, into traditional, potentially crowded, communication channels based on natural channel-sharing etiquette and turn-taking behavior.

STUDENT LEVEL / DISCIPLINE NEEDED:
Bachelor’s, Master’s or PhD/ Computer Science, Electrical Engineering or Human Factors Psychology Other/ Linguistics, Language Technology or Machine Learning

RESEARCH LOCATION: Battlespace Visualization Branch, Wright-Patterson AFB, Dayton, OH
Wright-State University

SoCHE

SoCHE Intern

HOME  INTERNSHIP PROGRAMS  COMMUNITY  BUSINESS RESOURCES

WRIGHT-PATTERSON AIR FORCE BASE SUMMER INTERNSHIP PROGRAM

SoCHE's Summer Internship Program provides opportunities for engineering and science students to gain valuable experience working on Wright-Patterson Air Force Base in Dayton, Ohio. Must be a U.S. citizen to apply.

SELECTION PROCESS

The student intern selection criteria includes: transcript indicating academic field and level of achievement, résumé, professional references, and a match between student interests and available projects.

There are a limited number of intern positions available and applications should be completed in a timely manner. Applications will be accepted through May 1st. For first consideration, please submit by February 8, 2016.

The selection of interns will be finalized between March and May 2016. Selected interns will be notified by email.

SoCHE will sponsor internships any time between May 1st and September 30th 2016. Interns should consult the program coordinator upon arrival and agree upon exact stop dates. Intern schedules are flexible within the following guidelines:

- Students and faculty mentors should agree upon the schedule;
- Internships may start no earlier than May 1st and
- Internships may end no later than September 30th 2016.

http://www.socheintern.org/wpaafb-summer-internship-program.html

12/9/2015
Other Programs...

• How can I learn more?
  • Council on Undergraduate Research Student Opportunities
    http://www.cur.org/resources/students/research_opportunities/
  • NASA… https://intern.nasa.gov/
  • Society for Industrial and Applied Mathematics
    http://www.siam.org/careers/internships.php
  • Pathways to Science
  • NIH
    https://www.training.nih.gov/amgenscholars

• Gee, it would be awesome if all of these resources were listed at the same place…
  http://science-math.wright.edu/research/undergraduate-research-experiential-learning/opportunities
Welcome! Learn about research positions, courses, internships, & other experiential learning opportunities below. Most of the opportunities are organized below based on departments and scientific disciplines. There are also tabs that will connect you to opportunities for internships at companies near and far as well as opportunities at the Wright Patterson Air Force Base Air Force Research Labs. Check these tabs often to learn of new opportunities within your discipline. Each tab also lists a point of contact for Undergraduate Research & Experiential Learning (UREL) within the department. These are faculty or staff members who have agreed to help students find research and internship experiences within their departments. Each tab also lists faculty members within each department who have registered with the CoSM UREL Faculty Network, thus indicating that they may have an opportunity open for new students. Research, Experience, Learn.

Biochemistry & Molecular Biology (BMB)

Chemistry

Earth & Environmental Sciences

Math/Statistics

Neuro, Cell, Physiology

Physics

Psychology

Internships (via WSU Career Services)

Air Force Research Laboratory Related Opportunities

Other Internship and On & Off-Campus Research Opportunities

https://science-math.wright.edu/research/undergraduate-research-experiential-learning
If you get accepted…

• You need to let your college know. This is to help us track our success BUT also get you resources to make sure you get the best experience possible.

• If you are in CoSM, contact me.

• If you are in CECS, contact the Brandeberry Center.
Need help???

• If you are a CoSM student, contact me.
• If you are a CECS student, contact the Brandeberry Center.
• Seek out help and advice from faculty members in your major.
WSU ASKs
(Apply Scientific Knowledge)

• Coming soon from CoSM...

Fall – Year 1
1st wave of 2nd year CoSM undergrads take Intro. to Research.

Fall – Year 1
Faculty form teams & submit research proposals & students submit proposals to join teams.

Fall – Year 2
1st wave (now 3rd year) students mentored to apply for internships and REU programs.

Fall – Year 2
- Research teams continue work from spring.
- 2nd wave of students begin & take Intro. to Research.

Spring – Year 2
1st wave students apply for internships/REUs w/ mentoring. 2nd wave research starts.

Summer – Year 2
1st wave hopefully at internships/REUs. 2nd wave summer research.

Summer – Year 1
Select students continue undergraduate research during the summer via fellowships or credit.

Fall – Year 3
1st wave (now 4th year) students engage honors or senior projects. Mentored for life post-WSU.
Questions?

Dr. Jason A. Deibel
CoSM Director of Undergraduate Research & Experiential Learning (DUREL)
cosm-undergradresearch@wright.edu

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A link to a PDF will be posted on our Facebook Page OR email the above address!!!