



Undergraduate Research Scholar at Wireless and Sensor Systems Lab (WSSL)



(Deadline: Dec. 30, 2020)

Lab website: <http://wsslslab.org/>

Wireless and Sensor System Lab is a creative technology research lab exploring novel wireless, mobile and wearables systems for healthcare and environmental monitoring, and we are looking for skilled and passionate undergraduate students to join us. The Wireless and Sensor Systems Lab holds a vision that wearable, mobile, wireless, battery-free sensing and intervention systems promise revolutionizing global scale applications across healthcare, environmental, agriculture, infrastructure management and so on. When joining us, you could be exposed to hand-on experiences in building fully integrated, end-to-end systems to demonstrate their scientific advancement in a real-world settings environment.

Participants can choose from one of the research areas to explore (see [Lab's projects](#)). Each research area requires a diverse set of skills - including PCB circuit design, firmware and software development, digital signal processing, machine learning, data mining and cloud computing. We are especially interested in students with sophomore- or junior-standing from across the Department of Computer Science and Engineering.

Prior research experience is not needed, but a passion for building IoT systems is strongly encouraged. We expect members of the scholarship to be able to commit 10 hours/week of their time to help and support other Lab members in doing research.

Research credit is available. Only 6 positions will be made available for the Spring 2021. The benefit for students would be made available in the future based on their performances and funding availability. If you are interested, please send your application package including background, CV, unofficial transcript (optional) to Prof. VP Nguyen via vp.nguyen@uta.edu.

Program goals

- Provide opportunities to evolve in novel and multidisciplinary research projects
- Step by step guide to complete research projects
- Work on projects that keep up with the latest research trends using advanced lab equipment
- Widen research networking with experienced Ph.D. students and scholars

Research Areas

- Smart-Health
- Smart Agriculture
- Mobile and Wearable Computing
- Low-power and Batteryless Computing

- UAV/UAS/Drone Privacy and Security
- Example research projects:
 - Non-invasive brain control: https://www.youtube.com/watch?v=6K-zi5BlqZ0&feature=emb_title
 - Typing on your teeth: https://www.youtube.com/watch?v=9oKeEvTbZo4&feature=emb_title
 - Hand gesture recognition using batteryless device: https://www.youtube.com/watch?v=t5KABrYErgc&feature=emb_title
 - Body as an electronic wire: https://www.youtube.com/watch?v=cpPjGwbCjsA&feature=emb_title
 - Drone privacy and security: https://www.youtube.com/watch?v=id2LxOsr_G8&feature=emb_title
 - Human oxygen level monitoring using mobile phone: https://www.youtube.com/watch?v=RQ88nsrl-xU&feature=emb_title
 - Capacitive touch communication: https://www.youtube.com/watch?v=ay0By3zXEZM&feature=emb_title
 - Human breathing monitoring using wireless signal: https://www.youtube.com/watch?v=APqgPOxlfIs&feature=emb_title
 - Human sleep posture monitoring: https://www.youtube.com/watch?v=oe7Pgi111Kk&feature=emb_title
 - Breathing tival monitoring using XBox: https://www.youtube.com/watch?v=3tgssPExvzw&feature=emb_title

Program Activities

- Members should attend the lab weekly to report their progress and issues while doing projects
- Members should present their work and related-works with high academic standards
- Each member will be assigned a mentor
- WSSL will provide all equipment to conduct projects
- Issues will be solved in group meetings with experienced students or Professor

Eligibility and Capacity

- WSSL currently has openings for six positions for CSE students who are interested in designing PCBs, programming embedded systems or making integrated systems.

Roles & Stipend

Students will receive a stipend proportionate to their contribution while working in the lab. At the end of the semester, we will have a meeting for student evaluation. The evaluation results are based on their diligence, outcome, and attitude towards research.

Level	Stipend	Estimated Time	Tasks
Newcomer	\$0	~ 1 semester	Safety Training Equipment Training Lab support

Apprentice	\$200 /semester	~ 2 semesters	Develop skills and mastery of equipment, materials, and tools. Apply skills towards a research project.
Practitioner	\$400 /semester	~ 2 semesters	Submit a research paper for review. Develop expertise in another domain. Offer training and assistance to other makers.
Trainer/Mentor	\$600 /semester	–	Develop expertise in 3 domains. Carry out independent research.
Fully-Funded Position	\$4500 /semester	–	Carry out funded-research activity (or independent research activity as applicable)