# Logos/cis-logo-exports-final-8-2015-3/Web/2_Department_Lockups/InformationScience/cis-infosci-2-color.pngMaster of Professional Studies in Information Science

# Sponsored Project Proposal Form – Spring 2018

Please complete the following project proposal form to sponsor an MPS Project. This form will be used to determine if your project is appropriate for MPS students and whether it is of sufficient scope for a semester long project (~400-500 person-hours). We will assign teams with complementary skills based on the skills and experience you list in this form. We will also share most of this form with the students to help them make their top project choices before we assign the projects.

Please direct any questions to the MPS Project Coordinator: [is-mps-projects@cornell.edu](mailto:is-mps-projects@cornell.edu)

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| Sponsor Name | | The MITRE Corporation | | | | | | Date | 11/14/17 |
| Contact Name(s) | | Matthew Kuzdeba,  Curtis Watson,  David Slater | | | Email(s) | [mkuzdeba@mitre.org](mailto:mkuzdeba@mitre.org), [cmwatson@mitre.org](mailto:cmwatson@mitre.org), dslater@mitre.org | | Phone | 781-271-5647,  781-271-6322,  703-983-5544 |
| Description of the Sponsor | | | | | | | | | |
| MITRE is an independent, not-for-profit organization that operates research and development centers for the federal government. MITRE provides research and development, design and prototyping of new technologies, systems engineering expertise, and information technology support to government agencies, which include the Department of Defense, Department of Homeland Security, Federal Aviation Administration, Internal Revenue Service, Department of Veterans Affairs, Office of the U.S. Courts, Department of Health and Human Services, and Intelligence Agencies. Our promise to customers is that we will deliver the best solutions to their most complex technical and operational problems—with only one outcome in mind—supporting their mission. Our principal locations are in Bedford, MA, and McLean, VA, with more than 60 sites worldwide. More information about MITRE can be found on our website at: <http://www.mitre.org>  MITRE hopes that these projects expose students to interesting topics that they might continue to work as an intern or full time employee of MITRE. Due to the nature of MITRE’s work, please note the following: We cannot hire individuals that require sponsorship currently or in the future. Most projects at MITRE require a security clearance. For those positions, individuals must be a US citizen to obtain a clearance. | | | | | | | | | |
| Please indicate which academic year and semester you would like to propose your project. | | | | | | | | | |
| Year | 2018 | | Semester | Fall | | Spring |  | | |
| Project Title | | | | | | | | | |
| Android Application for RF Spectrum Visualization and User Interface | | | | | | | | | |
| Project Goal or Description | | | | | | | | | |
| The goal of this project will be for the student team to develop an Android app to visualize the electromagnetic spectrum, radio frequency (RF) signals of interest within it, and allow for a user interface/display for information about the signals in the spectrum. The Android app will be able to interface with a phone’s RF receive chain to get spectrum data to process. The app will also be able to run machine learning signal recognition algorithms developed by another MPS project to determine and display information about the RF signals within the frequency band of interest. | | | | | | | | | |
| What activities are necessary to achieve the project goal? | | | | | | | | | |
| The team will need to determine how to interface with an Android phone’s RF receive chain to get access to digitized RF signals received by the phones antennas and RF electronics. The team will then be responsible for determining an approach to process the digitized signals and visually display the RF spectrum to the user through an Android app, providing user interface options for the user to select what frequency bands to look at, power level scales, etc. The frequency bands included can be those that commercial cellular, Wi-Fi, and Bluetooth operate over. Once the spectrum visualization tool is working, the team will incorporate additional machine learning signal recognition algorithms to extract information about the RF signals being received, and have the app display the results along with the RF spectrum. The signal recognition algorithms can be leveraged from a previous Fall 2017 semester MPS project. | | | | | | | | | |
| What outcome would determine that the project is a success? Do you expect specific deliverables? | | | | | | | | | |
| The expected deliverables for the project will include a final presentation, project report, and delivery of the code developed for the project.  Since this is a challenging problem, it is not expected that the student team will fully solve it and have a polished, completed product at the end. The goal is for the team to develop a prototype app that demonstrates an approach to visualizing the electromagnetic spectrum and displaying information related to the signals within it. | | | | | | | | | |
| What are the skills and experience must the students already know to start work on the project?  Please be specific and keep in mind that students will be building their skills during the duration of the project. | | | | | | | | | |
| The main required skills for this project include software development, Android app development, and user interface design. Knowledge is also needed on how to interface with other modules within a phone, which can be learned during the course of the project. | | | | | | | | | |
| What are the skills and experience required to complete the project that the students may learn while completing the project? | | | | | | | | | |
| The students will learn additional skills in Android app development, interfacing with phone hardware, and user interface design during the project. The students will also learn signal processing knowledge to be able to convert digitized RF samples to a visual display of the electromagnetic spectrum and to provide other information on the signals. Machine learning skills will also be developed during the last phase of the project. | | | | | | | | | |
| The project representative must be available 30 minutes per week for status reports, the interim report, and the final presentation. As the project sponsor, are you able to make this time commitment?  Yes. Please elaborate. | | | | | | | | | |
| We’ll be available as needed for meeting with the team remotely and answering questions over email, similar to our time commitment on the Fall 2017 MPS project. We will review and provide feedback on status and other reports/presentations as well. | | | | | | | | | |
| Some sponsors may choose to spend additional time with the student teams, e.g. phone contacts for monthly status discussions, reviewing research results, providing midpoint project feedback, and offering input to the final deliverables in advance of its completion. As the project sponsor, are you available to participate in these or any additional activities?  Yes. Please elaborate. | | | | | | | | | |
| See above response. | | | | | | | | | |
| The project representative needs to facilitate access to company resources as needed and approve expenses. As the project sponsor, are you able to facilitate access to such resources, should the need come up?  Yes. Please elaborate. | | | | | | | | | |
| If the need comes up, we’ve done this for other projects with Cornell in the past. | | | | | | | | | |
| Please consider other contributions listed below. Are you willing to make these contributions? (check all that apply)  Provide existing industry and company data as background at the beginning of the project.  Pay one or more team members to travel to your location for initial briefing / work session / final presentation.  Please elaborate. | | | | | | | | | |
| For the second item, in the past we’ve been able to provide Cornell a small amount of funding to cover the team visiting MITRE for their final presentation. We would look into that option in this case as well if there is interest. | | | | | | | | | |
| Please send your completed project proposal to the MPS Project Coordinator: [is-mps-projects@cornell.edu](mailto:is-mps-projects@cornell.edu) | | | | | | | | | |