

FACULTY MENTOR

Abi Samra, Nicholas

PROJECT TITLE

Tablet Application for Tracking and Analyzing Damage from Wildfires and Extreme Weather

PROJECT DESCRIPTION

Even during the recent hurricanes, utilities still used pen/paper to assess and document damage. These documents are then collected in the evening when the teams come back from the field, and decisions are made then. This process is prone to errors, inefficient and delays the restoration process.

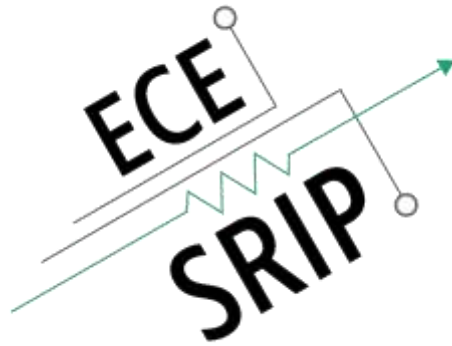
This project, will aim at putting a tablet or smartphone application that will capture all of these and send them to processing right away. This will eliminate errors and increase the efficiency of restoration. UCSD can commercialize this, directly or thru 3rd parties. This can be used here in California for example for fire damage, and other emergencies , as well as in “blue sky days”, i.e., normal operation.

INTERNS NEEDED

1-3 MS Students and 1 upper level undergraduate

PREREQUISITES

Excellent programming skills in iOS and Android apps. Good knowledge of AWS. Knowledge of large database manipulation is highly desirable.



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PROJECT TITLE

Transmission line design applets

PROJECT DESCRIPTION

Transmission line design is a science that requires a lot of knowledge to master. Thus, the young engineers will need to have good, accurate and estimates for some its aspects without having to resort to a scarce number of experts to consult with. These estimates are needed in order to go to the next step in terms of final design and specifications. For that, a number of user-friendly, applets, which will guide the engineer into the design of some specific aspects of transmission line, are very much needed in the industry and academia. These will need to built around solid engineering know-how and detailed equations that will make these applets powerful learning and even preliminary design tools. The user will not be encumbered to know the details of the algorithms, but if he/she wants to, the equations and assumptions will be available as further learning tools.

This project will create applets for: transmission tower footing surge impedance, lightning protection of substation, application of shield wires on transmission lines, coordination of the insulation requirements of transmission line, EMI interference,

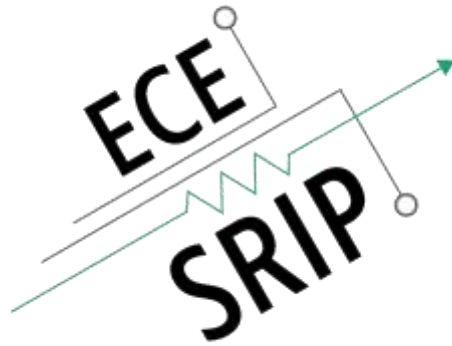
INTERNS NEEDED

1-2 upper level undergraduate 1-2 graduate

PREREQUISITES

Good programming skills. Knowledge of iOS is a desirable, but not essential, as we may want to commercialize these tools on the App Store.

This is a 2-year program as the number of applets good potentially be over 30-40



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PROJECT TITLE

Distribution systems applets

PROJECT DESCRIPTION

Calculating some parameters of distribution systems are complex, and they are even made more cumbersome with the addition of distributed energy resources, such as photovoltaics at the user's sites. Therefore, there is a need for accurate estimates for some these impacts before turning into very complex software, such as ETAP, to study them in detail.

For that purpose, this project will produce a number of user-friendly methods to study the impacts of placing distributed energy resources on the distribution lines, transformers, and other equipment. These applets will become powerful learning and even preliminary design tools. These tools will be checked for accuracy, limitations/boundary situations, etc. and benchmarked against the results of detailed programs, such as ETAP, that UCSD has a license for.

This project will create applets for: voltage drop, distribution line losses, fault current calculations, voltage rise with photovoltaic on the distribution feeder, ideal placement of capacitor banks, etc.

INTERNS NEEDED

Upper level undergraduate (1 or 2) graduate

PREREQUISITES

Good programming skills. Taking of ECE 180 – Distribution Systems, is a plus.