

Student Master Project

Project title: Harmonic sensor for soil moisture identification.

Project type: Master Thesis Project

Faculty and Research group: EEMCS, RadioSystems Group

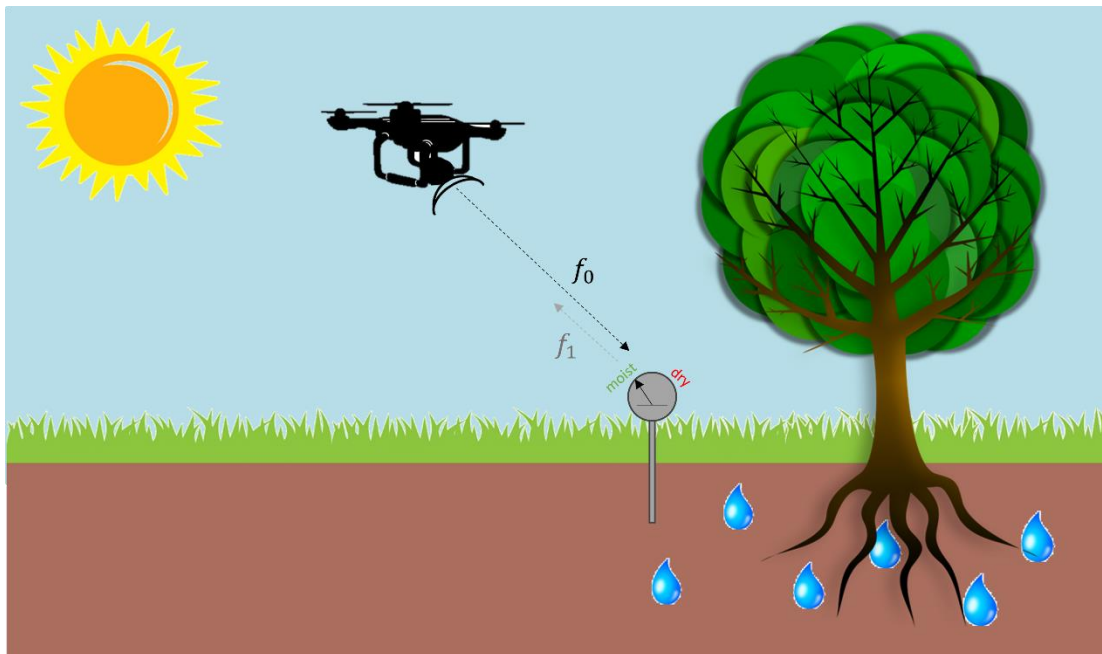
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Project description

The aim of this project is to design soil moisture sensors based on harmonic radar principle. The project designs a novel harmonic radar prototype based on second harmonic detection with respect to the property of material. Initially the design will be done on commercially available substrates and later extended to bio-based materials for eco-friendly design. Various parametric analysis will be done and optimised during the design phase. The sensors will be designed using commercially available electromagnetic simulation software (Ansys HFSS). The designed prototype will be fabricated and tested in real scenarios which requires soil moisture identification.



Type of work: Theory 20%, Design 30%, Experimental 20%, Documentation & Reporting 30%

Student tasks

1. Simulate a novel radiating design having prominent harmonic radiation on Ansys HFSS software with acceptable reflection and radiation properties on a selected material. Which includes
 - Design of radiating prototype on conventional low loss materials.
 - Extension of the design to biodegradable materials if possible with acceptable radiation properties.
 - Optimisation of the design for moisture sensing applications