

WORKS AND PROJECTS

- Thermal analysis of combustion phases and different forest fire types (2008).
- Radiometric model to evaluate the safety distance for firemen working with hand-operated systems (2008-2010).
- Development of ERP personalized software according to customers' needs in Python language (2008-2009).
- Radiometric for identification of hot spots and as a performance assessment tool for sensors operating in complex orography environment (2008-2009)
- Development of a graphic software using MATLAB for automatic hot spot detection for forest fire monitoring using thermal images (2009-2010)
- Development of a Visual Basic software for automatic acquisition of thermal images using thermal camera for forest fire monitoring (2009)
- Set up and management of a mini weather radar network: control software (C language), web site management (PHP, HTML), database management (MySQL). (2010-2017)
- On field installations and configurations of X-band mini weather radar network. (2010-2017)
- Ideation and development of a software in C language for acquisition of GPS measurement using low cost sensors used in wireless sensors network for landslide monitoring (2012).
- Development of the software in C language to control and manage a wireless sensor network designed as anti-theft alarm system for photovoltaic plant. (2012)
- Algorithm to evaluate the weather radar performance using ground clutter echoes (2011-2012).
- Ideation and development of a software to control the X-band weather radar stability using ground clutter echoes. (2012-2013)
- Ideation and development of a C software to calibrate the X-band weather radar using radar/rain gauges comparisons (2013)
- Development of the software (in C language, MySQL, PHP) to control and manage a wireless sensor network designed for smart gas metering. (2013)
- EM field exposure evaluation and development of the software (in MATLAB) for automatic acquisition of measurements using spectrum analyzer. (2013)
- Development of a MATLAB simulator for FMCW X-band radar. (2013)
- Development of software for ARM programming using an embedded Linux OS distribution and C language, in the framework of a low cost FMCW radar design (2014)
- Development of a MATLAB simulator for FMCW X-band weather radar. (2014)
- Power consumption analysis of different Wireless Sensor Networks' nodes for environmental monitoring. (2014).
- Analysis of extreme rain events detected by X-band weather radar. (2014-2015)
- Feasibility analysis of floating and submersible probes to monitor water, river and sea (2014-2015).
- Feasibility analysis of radar for wind detection to be used as support for wind farms. (2015)
- Feasibility analysis of sensing probes for hail formation. (2015)
- Radar coverage analysis of a river basin using X-band mini weather radar. (2015)
- Feasibility analysis to recharge RFID tags using a Unmanned Aerial Vehicle (2015)
- Development of C# software to control a prototype of FMCW short range and low cost weather radar. (2015-2016)
- Feasibility analysis of remote sensing probes for raindrops and turbulence studies. (2016)
- Feasibility analysis of a FMCW radar to be used as a microwave rain gauge. (2016)
- Side scattering analysis of a C-band weather radar using a low cost receiver. (2016)
- Analysis of the possibility to use 24 GHz and 77 GHz automotive radar as a short range radar to monitor and measure rain. (2016-2017)
- Spectral analysis of forest Fire noise for early detection and wildfire classification (2016-2017)
- Pre-feasibility analysis for the use of a 77 GHz radar on board on a High Altitude Pseudo Satellite (HAPS) to monitor the cirrus clouds (2017).
- Preliminary rain measurements with a 77 GHz radar for automotive applications (2017).
- Determination of a new KE-Z relation between Kinetic Energy (KE) and Radar Reflectivity Factor (Z) using a set of data available in the scientific literature (2017).
- Realization of KE-maps with high temporal and spatial resolution using a X-band mini weather radar (2017-2018).
- Radar meteorology with non-standard and unconventional frequencies (2017-2018).
- Design of a communication system based on LoRa® technologies for probes for atmospheric monitoring (2018).
- LoRa® technology electromagnetic propagation studies and measurements (2018).
- Inverse Fresnel problem in GNSS reflectometry (2018).

RESEARCH PROJECTS

- **SISPE** (Sistema Sperimentale di Previsione delle Esondazioni)
- **HIGHWEAR4TT** (High resolution mini WEATHER Radar 4 Terrain Transport)
- **COMPLETE** (CIoud-MicroPhysics-turbuLEnce-TElemetry: an intermultidisciplinary training network for enhancing the understanding and modeling of atmospheric clouds)
- **AUTO μ RAIN77** (Studio di fattibilità per la realizzazione con componenti AUTOMotive a 77 GHz di un MICROWave RAINgauge).
- **AUTO μ RAIN** (Studio di fattibilità per la realizzazione con componenti AUTOMotive di un MICROWave RAINgauge).
- **POLARIX** (Technology Intelligence sull'introduzione della tecnologia POLARImetrica su mini radar meteo in banda X)
- **ISPIRA** (Indagine per Stima Produzione Idroelettrica mediante dati meteoRadar e Altimetria di precisione)
- **HaSP** (Hailstorm Sensing Probes)
- **RASTA** (Technology Intelligence sull'introduzione dell'analisi STATistica degli echi RADar per la più efficace misura delle precipitazioni)
- **SENSOMAC** (SENSori galleggianti e SOMmergibili per il Monitoraggio delle ACque).
- **SDR** (Software Defined Radar)

- **RITMARE** (Ricerca Italiana per il MARE)
- **SMAT F2** (Sistema di Monitoraggio Avanzato del Territorio, Fase 2)
- **X-RADAG** (Toward sustainable agricultural management using high-resolution X-band radar precision estimates)
- **PRESMAM** (High-resolution PREcipitation eStimation using Multisensor system for improving Agricultural Management and environmental benefits)
- **MONITORAGGIO RADAR AMBIENTALE**
- **GSM** (Gas Smart Metering)
- **AGRO RADAR**
- **MICROUAV**
- **RWIND** (Mini Radar per WIND detection)