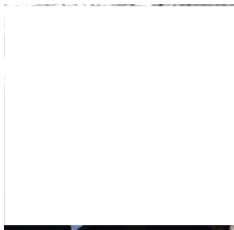


PERSONAL INFORMATION



Luca Milani



Sex Male | Date of birth 8 August 1991 | Nationality Italian

Job applied for: Borsa di studio Sapienza-DIET. Prot. 134/2016 Bando N. 3/2016

Last cv update: 19 February 2016

WORK EXPERIENCE

January 2016 – Present

Member

- Centre of Excellence on Remote Sensing and Hydro-Meteorological Modelling (CETEMPS), University of L'Aquila, Italy
 - Department of Information Engineering (DIET), Sapienza University of Rome, Italy
- Cooperation on research activities about ground-based and space-based microwave radiometry and atmospheric radiopropagation at Ka band and above.

October 2015 – Present

Stagiaire

ESA (European Space Agency) – ESOC (European Space Operations Centre)

Robert-Bosch-Straße 5, 64293 Darmstadt, Germany

Traineeship in the context of future *ESA interplanetary space missions*. The work contributes to the **RadioMeteorological Operations Planner** project aimed at improving data return in Ka band by use of *weather forecast* for the **Bepi Colombo** mission. End date: 29th February 2016. Main topics:

- Ka-band data return maximization algorithm with respect to the classical **link budget** formulation.
- **RPG-HATPRO** (Radiometer Physics GmbH) **radiometer** data assessment and **retrieval** (Neural Network) model analysis. Very good knowledge in terms of product data and operational/software manual. Familiarity with RPG binary file format, and NetCDF data exploitation.
- Development of a **Simplified Radiative Model** (in MATLAB) able to estimate time series of atmospheric path attenuation and brightness temperature, only exploiting surface measurements (i.e. temperature, pressure, humidity and rain rate), coming from Cebreros and Malargüe DSA **Weather Stations**. In particular, the model aims at detecting the presence of **clouds**, as well as **non-precipitating water**.
- Comparisons between the model and the radiometer attenuation products, in terms of time series, cumulative distribution functions and data volume estimation (**validation** of maximization algorithm).
- Application and data processing of PSU/NCAR **MM5** regional weather forecast mesoscale model.
- Familiarity with 3D **Radiative Transfer** Models (inverse problems, validation, output quality check).
- Familiarity with **ITU** Recommendations and ESA tools to statistically characterize the link-budget.

Position in the **Ground Stations System Division** (OPS-GSY). ESA tutor: **Marco Lanucara**

University tutor: **Prof. Frank Silvio Marzano** ("La Sapienza", University of Rome, DIET Dept.)

Conference paper for MICRORAD 2016, Espoo, Finland (see Additional inf. Section)

Conference paper for EGU 2016, Vienna, Austria (see Additional inf. Section)

EDUCATION AND TRAINING

March 2015 – January 2016

"Excellence program" in Electronic Engineering (MSc)

7 EQF level

"La Sapienza", University of Rome, DIET Dept. of Information Engineering, Via Eudossiana, 18, 00148 Rome (Italy)

The Excellence program enhances the knowledge and competencies of students interested in enriching their education (additional activities for ten students per year at maximum). Main topics:

- **RadioMeteorological Operations Planner project** (see work experience for details).
 - "**Sun-Tracking Microwave Radiometry: Estimating Atmospheric Attenuation and Sun Brightness Temperature at Ka, V and W band**", under the supervision of *Prof. Frank Silvio Marzano* ("La Sapienza", University of Rome) and *Vinia Mattioli* (EUMETSAT, European Organisation for the Exploitation of Meteorological Satellites), in collaboration with *G. Brost* and *K. Magde* (AFRL "Air Force Research Laboratory", Rome NY, USA).
 - **RPG-LWP** (Radiometer Physics GmbH) **radiometer** data processing.
 - Computation of **atmospheric attenuation** exploiting the sun as a beacon source.
 - **Error budget analysis** in estimating path attenuation and Sun brightness temperature.
 - Comparisons with respect to classic retrievals and parametric models derived from both sky-noise Eddington **radiative transfer** model simulations and **radio-soundings**.
- Submitted paper on IEEE Transactions on Antennas & Propagation* (see Additional inf. Section)
- Conference paper for IGARSS 2016*, Beijing, China (see Additional inf. Section)
- **AlphaSat performances analysis in Ka-band and Q-band** (ITU-R Satellite Link Budget Design - ESA W-band project - C. Riva, "Polytechnic University of Milan" and F.S. Marzano "Sapienza University of Rome").
 - Survey about **Propagation Terminal Requirements** of the receiving stations of Rome (EUR) and Milan (Spino D'Adda) in Italy.
 - Evaluations of cumulative distribution functions of total attenuation, noise temperature and signal to noise ratio in Ka and Q bands following the **ITU** Recommendations.
 - **Site diversity gain** code extension (in MATLAB) following Rec. ITU-R P618-9.

October 2013 – January 2016

- **Imaging radar:** Development of a processor in MATLAB
 - Focalization of SAR images with RCM correction, using standard and auto-focus techniques.
 - Despeckling techniques based on Multi-Look and MMSE (Lee) filtering, with consequent evaluations of performances.

Master degree in Electronic Engineering (MSc)

7 EQF level

Final mark: 110/110 cum Laude

Specialization: Radiopropagation, Remote Sensing, Earth Observation and Antennas

“La Sapienza”, University of Rome, DIET Dept. of Information Engineering, Via Eudossiana, 18, 00148 Rome (Italy)

- Thesis title: “**Optimization of data transmission at Ka band and beyond by microwave radiometric techniques for telecommunication and deep space missions**” (in English)
- Special mention for publication on the collection of best theses in electronic engineering.
- Advisor: Prof. Frank Silvio Marzano (“La Sapienza”, University of Rome, DIET Dept.)
- Co-advisors: Dr. Vinia Mattioli (EUMETSAT) and Dr. Marco Lanucara (ESA-ESOC)

February 2012 – November 2013

“Excellence program” in Electronic Engineering (BSc)

6 EQF level

- **Visitor student** “Short Term Scientific Mission” (**August 2013 – September 2013**)

Trinity College, University of Dublin, Dunlop Oriel House, 34 Westland Row, Dublin, Ireland.

CTVR / the telecommunications research centre. Supervisor: Prof. **Luiz A. DaSilva**

European program: COST IC0902 (Cognitive Radio and Networking for Cooperative Coexistence of Heterogeneous Networks)

- AIR-AWARE: **cognitive radio** research program aimed at improving RF environment, channel conditions, link performance, as well as at preventing interferences.
- Design of an **automatic network recognition system** in the 2.4 GHz ISM band based on MAC sub-layer feature (in particular **Wi-Fi** and **Bluetooth**), i.e. an **energy detector**, able to extract frame patterns in time domain.
- Use of both **USRP** (Universal Software Radio Peripheral, National Instruments Ettus Research) and **Spectrum Analyzer** (R&S FSVR) to capture the signals. Data processing with **MATLAB**.

- **Internship (February 2012 – February 2013)**

“SPinV - Supporting People Indoor: a navigation Venture” S.r.l. (University Spin Off)

ACTS Lab – DIET dept., Via Eudossiana, 18, 00148 Rome (RM) (Italy) <http://newyork.ing.uniroma1.it/SPinV/>

- Hybrid indoor positioning algorithms based on both Wi-Fi and RFID systems.
- Indoor Wi-Fi planning: determining the optimal position of Wi-Fi access points.
- First demonstration in December 2012: testbed assembly and performance evaluations.

October 2010 – November 2013

Bachelor degree in Electronic Engineering (BSc)

6 EQF level

Final mark: 110/110 cum Laude

“La Sapienza”, University of Rome, DIET Dept. of Information Engineering, Via Eudossiana, 18, 00148 Rome (Italy)

- Thesis title: “**Automatic recognition of networks based on Energy Detection**” (in English)

Published on http://acts.ing.uniroma1.it/Archivio_tesi/milani/milani_thesis.pdf

- Advisor: Prof. Maria-Gabriella Di Benedetto (Sapienza, University of Rome). In collaboration with CTVR (Trinity College, University of Dublin).

September 2005 – July 2010

High school degree – Diploma di Liceo Scientifico

4 EQF level

PNI (Computer science’s National Plan)

Final mark: 99/100

Liceo Scientifico Statale “G.B. Grassi”, Via Sant’Agostino, 8, 04100, Latina (LT) (Italy)

PERSONAL SKILLS

Mother tongue

Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	C1	C1	C1

English

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user

Job-related skills

- Very good knowledge in using **Spectrum Analyzer** and **I&Q recorder** (R&S) acquired during lab courses and thesis works.

- Very good knowledge in using **Network Analyzer** (Agilent) acquired during lab courses.

- Ability to learn and develop the needed skills and knowledge. Ability to rapidly absorb, and make use of, information presented in written and oral communications in a dynamic context.

- Systematic approach in planning the work and in coping with tight schedules and multiple tasks.

- Ability to write accurate and consistent **technical documentation**.

- **ECDL** Certificate (European Computer Driving License) obtained on April 22, 2009.

- Participation in several seminaries of companies and research institutes (like ESA-ESRIN, Rhode&Schwarz, KeySight, MathWorks, CTVR showcase, etc.).

Computer skills

- **Excellent knowledge:** *Mac OS X, Windows OS, MathWorks MATLAB, Microsoft Office* (Word, Excel, Power Point).

- **Very good knowledge:** *Ubuntu OS, C programming, AVID Pro Tools, Apple Logic Pro, LaTeX.*

- **Good knowledge:** *Exelis ENVI* (image analysis, spectral analysis), *GNU Bash* programming, *C++ programming, GNU Radio* (USRP software), *Assembly* (Microchip MPLAB for PIC MCU).

- **Basic knowledge:** *NI AWR MicroWave Office* (RF/Microwave Circuit Design Software), *NGSpice, VHDL, Python, R programming, Wolfram Mathematica.*

Communication skills

- Excellent communication and relation skills acquired during school/university experiences in work/study groups. Willingness to work in multicultural environments.

- Excellent skills in coordination and leadership team. Predisposition to teamwork.

- Other skills**
- I've been studying drums since I was eleven. I played drums in an important music local band for five years and I performed about 70 concerts in a lot of cities of Italy.
 - I organized several music events in my town and I actually manage a home recording studio for local music bands.
 - "AVID/Digidesign Pro Tools" advanced license for Audio Recording, with course at "Crocodile Recording Studio" in Latina (LT), in May 2010.
 - I attended the "Agesci" Scout association for ten years.
 - I practiced "Karate" for twelve years (brown belt, Fijikam federation).
 - Running and ski are my passions.
- Driving licence**
- European driving licence (Class: A1 and B).

ADDITIONAL INFORMATION**Publications – Conferences**

Submitted paper on 31-Jan-2016:

Marzano Frank S., Vinia Mattioli, Luca Milani, Kevin M. Magde, and George A. Brost, "Sun-Tracking Microwave Radiometry: All-weather Estimation of Atmospheric Path Attenuation at Ka, V and W band", IEEE Transactions on Antennas & Propagation

Marzano Frank S., Luca Milani, Vinia Mattioli, Kevin M. Magde, George A. Brost, "Retrieval of precipitation extinction using ground-based sun-tracking millimeter-wave radiometry", IGARSS 2016, The International Geoscience and Remote Sensing Symposium, 10–15 July 2016, Beijing, China.

Biscarini Marianna, M. Montopoli, D. Cimini, L. Milani, F. S. Marzano, K. De Sanctis, S. Di Fabio, M. Montagna, M. Mercolino, M. Lanucara, "Microwave radiometric characterization of deep space Ka-band channel from numerical models and experimental ground data", MICRORAD 2016, 14th Specialist Meeting on Microwave Radiometry and Remote Sensing of the Environment, 11–14 April 2016, Espoo, Finland.

Montopoli Mario, Frank S. Marzano, Marianna Biscarini, Luca Milani, Domenico Cimini, Klaide De Sanctis, and Saverio Di Fabio, "Evaluation of Deep Space Ka-Band Data Transfer using Radiometeorological Forecasts and radiometer measurements", European Geosciences Union General Assembly EGU 2016, 17–22 April 2016, Vienna, Austria.