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Paolo
Racioppa

EXPERTISE

Aerospace engineer

Many years of experience in radio science experiments onboard deep space exploration missions.

Areas of competence: Orbit Determination, Tracking Systems, Deep Space Missions, Astrodynamics, Satellite Communications, Signal Processing, Space Environment, Planetary Science.

WORK EXPERIENCE

OCT 2006 – CURRENT – Roma, Italy

Research Collaborator/Engineer

Sapienza Università di Roma

- Development of a multi-arc filtering tool for orbit determination with batch processing or very large data sets, stochstic process noise, and multi-mission support;
- Orbit determination and radio-metric data analysis of the Cassini And Juno missions for the measurements of Titan, Saturn and Jupiter gravity fields.
- Simulations of mission scenarios and performance assessment of the radio science experiments onboard the Veritas (proposal), Cassini, Juno, Bepi Colombo, and Juice missions;
- Science requirements definition and management support for the radio science experiment onboard the BepiColombo mission;
- Error budget and link budget analyses, implementation of a breadboard signal simulator and correlator with spread-spectrum modulation for the ESA/ESOC contract: "Improvement of Delta- DOR performances for 1 nrad accuracy for precise landing support".
- Error budget analysis of current Doppler, Range and Delta-DOR tracking system at ESA, Error budget validation with navigation data of currently flying missions, definition of a tracking system with one order of magnitude improved performances for the ESA/ESOC contract: "Interdisciplinary study on enhancement of end-to-end accuracy for spacecraft tracking techniques".
- Development of a planetary rotation model including polar motion, precession, nutation, and libration effects, link budget analysis for Mars and Moon landers with direct-to-earth communication capability in X-band and Ka-band, support for development of an end-to-end mission simulator for the ESA/ESTEC contract "Radiocomm signals: A new way of probing the surface of planets".
- Analysis of Mars environment effect and system architecture definition for a GNSS on Mars employing small satellites under the ESA/ESTEC contract "In vestigation of Key Technologies for a Mars Positioning and Communication System using Small Satellites - EXPRO+"

Center for Aerospace Research

FEB 2006 – JUL 2006 – Darmstadt, Germany

Trainee

European Space Operation Centre

- Support for the test, validation and performance analysis of the software correlator for the ESA Delta-DOR tracking system at the Operations-Ground Segment and Signal processing (OPS-GSS) section.

HONOURS AND AWARDS

Group Achievement Award to Cassini Radio Science Team – NASA
For outstanding contributions leading to the success of the Cassini Radio Science investigation at Saturn.

EDUCATION AND TRAINING

26 MAY 2006 – Via Eudossiana 18, Roma, Italy

M.Sc. in Astronautical Engineering

Sapienza Università di Roma - Scuola dI Ingegneria Aerospaziale

Orbit Determination, Tracking Systems, Deep Space Missions, Astrodynamics, Satellite Communications, Signal Processing, Space Environment, Planetary Science

Field(s) of study

- Aerospace Engeneering

110/110summacumlaude. | Angular position determination of interplanetary spacecrafts by means of VLBI techniques

LANGUAGE SKILLS

MOTHER TONGUE(S): Italian

English

Listening	Reading	Spoken production	Spoken interaction	Writing
C1	**C2**	**C1**	**C1**	**C1**

DIGITAL SKILLS

Specialized Software

Expert user of NAIF-SPICE / Expert user of MONTE / Expert user of DPTRJ-ODP

Programming

Expert user of Python / Expert user of FORTRAN 90952003 / Proficient User of MATLAB / Proficient user of bash

Other

Debian Linux / Latex Software / Microsoft Office