

Curriculum Vitae



Personal information

Surname, First name **LAGRASTA, Stefano**
Address via Tagliamento, 76 – 00198 Roma (Italy)
Telephone +39 06 8553383 **Mobile:** +39 3476589984
E-mail lagrasta.stefano@alice.it
Nationality Italian
Date of birth 29.4.1962
Gender Male – Married since 1993, father of 2 kids

Work experience

<p>Dates</p> <p>Name and address of employer</p> <p>Type of business or sector</p> <p>Occupation or position held</p>	<p>From 7.5.2007</p> <p>Telespazio S.p.A. – Via Tiburtina, 965 – 00156 Rome (Italy)</p> <p>Satellite services – Satellite systems operation</p> <p>Head of “Navigation Systems and Services” Dept., under Telespazio “Systems, Applications and Services” technical Division.</p> <p>Member of Scientific Committee in the Space Operations Academy Foundation for satellite radio-assisted Navigation related teaching/developments.</p> <p>The Unit deals with engineering development and solutions for satellite Navigation. A pseudolite system has been developed by the lead team for ENAV, the Italian authority and company for Air Navigation Services.</p>
<p>Main activities and responsibilities</p>	<p></p>
<p>Dates</p> <p>Name and address of employer</p> <p>Type of business or sector</p> <p>Occupation or position held</p>	<p>From 14.2.2003 to 2.2007</p> <p>Telespazio S.p.A. – Via Tiburtina, 965 – 00156 Rome (Italy)</p> <p>Satellite services – Satellite systems operation</p> <p>Head of “Systems” Dept. first, then of “New Products and Technology Development” Dept., under Research & Development Division of the Company.</p>
<p>Main activities and responsibilities</p>	<p>Coordination of a team, mainly composed by engineers, participating to several R&D Proposals and related activities, especially in the field of Satellite Navigation.</p> <p>Personal involvement in the development of theoretical background, design and implementation of simulator and</p>

performance evaluation systems.

Active participation to the LEOP operations of HB7A and ThaiCom5 satellites, joining the Flight Dynamics team.

Dates	From 10.2000 to 2.2003
Name and address of employer	Telespazio S.p.A. – Via Tiburtina, 965 – 00156 Rome (Italy)
Type of business or sector	Satellite services – Satellite systems operation
Occupation or position held	Project manager / Programme manager
Main activities and responsibilities	Leaves Fucino Space Station and joins the "Galileo" Navigation Business Unit at Telespazio headquarters in Rome. Appointed Project manager and then Programme manager of STENAV (Satellite TEST bed for NAVigation and communication services), a simulator of the Galileo system commissioned by ENAV, co-funded and developed by Telespazio in a joint venture with Alenia Marconi Systems (now Selex SI).
Dates	From 7.1998 to 10.2000
Name and address of employer	Telespazio S.p.A. – Via Tiburtina, 965 – 00156 Rome (Italy)
Type of business or sector	Satellite services – Satellite systems operation
Occupation or position held	Analyst / Project manager
Main activities and responsibilities	Employed in Telespazio, working first in Rome and then at the Fucino "Piero Fanti" Space Control Centre (since 1/1999), participates the design and implementation of the LEOP Ground Segment, dealing with the related Flight Dynamics System (FDS) component. Takes part to the design, development and AIT/AIV of "ARTEMIS" and "MITA" FDS. Appointed in January, 2000, Project manager of the FDS for SATELCOM mission.
Dates	From 1997 to 7.1998
Name and address of employer	Alenia Aerospazio S.p.A. – Via Saccomuro, 24 – 00131 Rome (Italy)
Type of business or sector	Space systems design and implementation
Occupation or position held	Analyst / Project manager
Main activities and responsibilities	Designed and developed the overall AOCS AIT S/W architecture and attended the whole AOCS verification cycle for the ARTEMIS ICDS (Integrated Control Data System) Flight Model qualification campaign. Appointed responsible of the PRIMA spacecraft bus Attitude and Orbit Control System (AOCS), for what the AOCS Modes design is concerned, simulation and on-board software implementation. Leaves Alenia Aerospazio to join Telespazio in July, 1998.
Dates	From 1995 to 1996
Name and address of employer	Alenia Aerospazio S.p.A. – Via Saccomuro, 24 – 00131 Rome (Italy)
Type of business or sector	Space systems design and implementation
Occupation or position held	Analyst / Task leader

Main activities and responsibilities	Appointed responsible for the ARTEMIS ICDS AOCS control laws. Involved in the verification and test of ICDS AOCS, defining procedures and programming the test sequences for the ICDS Engineering Model (EM) qualification campaign, working both at Alenia and at DASA SGSE.
Dates	From 1992 to 1994
Name and address of employer	Alenia Aerospazio S.p.A. – Via Saccomuro, 24 – 00131 Rome (Italy)
Type of business or sector	Space systems design and implementation
Occupation or position held	Analyst / Task developer
Main activities and responsibilities	Responsible for the analysis, design and flight S/W implementation of the Normal Mode for the ARTEMIS satellite. The project (ICDS Programme) is carried out as a joint venture with Daimler-Benz Aerospace (DASA) and Alenia Spazio; resident at DASA premises (Munich, Germany) for several months, participating in the common design and development.
Dates	1991
Name and address of employer	Selenia Spazio S.p.A. – Via Saccomuro, 24 – 00131 Rome (Italy)
Type of business or sector	Space systems design and implementation
Occupation or position held	Analyst / Task developer
Main activities and responsibilities	Joins Selenia Spazio in January, 1991, being specialised in Systems Theory and Automated Control. Employed for taking part to the development of the first 3-axis attitude control (and data handling) system built in Italy, targeted to geostationary telecommunication satellites. At the very beginning, the activity is funded by the Italian Space Agency (ASI) and named “PICS” Programme. It then evolves to the larger ICDS Programme for ESA ARTEMIS spacecraft.
Education and training	
Dates	July, 1990
Title of qualification awarded	University Degree in Electronics Engineering (5-years Course) Specialisation: Control Systems and Automation Final Grade: 110/110
Name and type of organisation providing education and training	“La Sapienza” University, Roma, Italy
Principal subjects	Graduation thesis on: <i>“Optimisation of Orbit Transfer Manoeuvres”</i> . Development, at Telespazio premises, of an optimisation code for satellite orbit manoeuvring with minimum fuel consumption. The algorithm adopts Augmented Sequential Lagrangian functions to account for imposed orbit targeting and “rendez-vous” constraints. A Quasi-Newton BFGS (Broyden-Fletcher-Goldfarb-Shannon) method is used for (each) inner minimisation phase. Kinematics variables are expressed in the transformed variable domain of the so called “Linear and Regular” Celestial

Personal skills and competences

Mother tongue

Other language(s)

Self-assessment

European level ()*

English

Mechanics.

Italian

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
C1	Proficient user	C2	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user

(*) *Common European Framework of Reference for Languages*

Social and Organisational skills and competences

Team working, coaching of the coordinated resources.

Teaching of Navigation principles and Estimation/Filtering theory at University Master courses.

Assignment of Graduation Thesis arguments for students, dealing with theoretical and practical developments in the field of space applications (mainly Attitude Control, Attitude Determination, Flight Dynamics and Orbit Determination, Navigation Positioning/Timing).

Technical skills and competences

Design and implementation of algorithms related to State Estimation theory, Non-linear Programming (Optimisation), Filtering and Signal Processing.

Design and implementation of feedback control systems, mainly applied to the attitude manoeuvring of satellite platforms.

Design and implementation of Navigation positioning algorithms, including non-linear filtering for accurate co-ordinate determination of roving receivers and satellites equipped with GNSS receivers.

Navigation systems modelling, with design and implementation of ground segment support related algorithms; e.g.: techniques for efficient computing of the Galileo navigation message, as well as strategies and innovative algorithms for Orbit Determination and Time Synchronisation of GNSS space vehicles.

Real-time simulator systems, especially related to spacecraft attitude control, orbit transfer and orbit determination, generation of satellite radio-assisted navigation observables.

Advanced use of CAD support tools for applied mathematics, e.g.: production of "extension libraries" loadable during run-time as shared objects or "DLL".

Design and implementation of remote control / network distributed applications, mainly via the RPC protocol (on TCP/IP or UDP).

Design and implementation of Flight Dynamics algorithms, production of related software and graphic user I/F for an

	operational environment.
	Design of AOCS qualification tests and development of EGSE software for AIV.
	Design, simulation, implementation of spacecraft Attitude and Orbit on-board control modes.
	Optimisation models and computing code for Orbit Transfer Manoeuvre design.
Computer skills and competences	<p>Use of all “common tools” for Office Automation (Word processing, production of spreadsheets, presentations, e-mail exchange, etc.) commonly available under Windows and Linux Operative Systems (e.g.: by Microsoft and Sun).</p> <p>Use of math CAD packages (MatrixX/SystemBuild, Matlab, Scilab) especially tailored to the analysis and simulation of dynamic systems.</p> <p>Use of packages for planning the mission of space vehicles and to generate reference flight dynamics products via remote control (STK).</p> <p>Implementation of S/W components and algorithms within various computing environments (generally UNIX/Linux, otherwise Windows, VAX/VMS in the past). Capability of programming using the following source languages: “C”, Ada, Tcl/Tk, FORTRAN ‘77. Knowledge of the free compiling tools by GNU and of their portings (e.g.: “gcc”, “g77”, GNAT, “Cygwin”).</p>
Other skills and competences	Experience with ground test equipment for AOC subsystems qualification. Use of programming languages and tools applicable at EGSE level (e.g.: TESLA, an ETOL-like language).
Additional information	<p>Main papers (as principal author, unless otherwise stated):</p> <ol style="list-style-type: none"> 1 <i>S. Lagrasta, S. Battistini: “Applying UKF nonlinear state estimation techniques to formation-flying satellite constellations”, ENC GNSS 2009 Conference</i> 2 <i>S. Lagrasta et alii: “A summary of company experiences on GNSS introduction in civil aviation”, ENC GNSS 2009 Conference</i> 3 <i>co-author with alii: “Design and test activities for a ground pseudolite prototype, aiming at GNSS augmentation for aircraft navigation”, ENC GNSS 2009 Conference</i> 4 <i>co-author with alii: “The Galileo Test Range (GTR): status and evolution perspectives for next development phase”, ENC GNSS 2009 Conference</i> 5 <i>S. Lagrasta, C. La Rocca: “Positioning and Navigation on the Moon”, Science Academy of Washington, 2006</i> 6 <i>S. Lagrasta “Applicazione dell’unscented Kalman Filter alla Soluzione delle Equazioni della Navigazione” , Atti dell’Istituto di Navigazione, Settembre 2006</i> 7 <i>S. Lagrasta “Unscented Filtering for LEO Satellite Orbit Determination”, Tyrrhenian International Workshop on</i>

Digital Communications, 6-8 Settembre 2006 – Ponza Island, Italy

- 8 *F. Rossi, S. Smriglio, A. Salonic, S. Lagrasta: "Navigazione satellitare, Galileo e un problema di scheduling", Associazione Italiana di Ricerca Operativa, AIROnews, X, n.3-autumn 2005*
- 9 *S. Lagrasta: "Navigation and Clocks, Time, Relativity Modelling: a Short Survey", International Workshop on Galileo Time, Torino, 2004*
- 10 *S. Lagrasta, G. Del Duca, F. Malvolti, V. Di Francesco "The STENAV Test Bed: interoperation of GALILEO and GPS" in GNSS 2004 Proceedings, Rotterdam – Olanda*
- 11 *F. Malvolti, S. Lagrasta. "The evaluation of ephemeris parameters for constellations of satellites for radio-navigation" in GNSS 2004 Proceedings, Rotterdam – Olanda*
- 12 *S. Lagrasta, F. Malvolti, G. Valentini: "Real-Time algorithms for Dynamic State Estimation from GPS Observables", AIDAA, Roma, 2003*
- 13 *F. Malvolti, S. Lagrasta. "An innovative algorithm for fast evaluation of GPS-like ephemeris parameters" in AIDAA 2003 Proceedings, Roma - Italia*
- 14 *S. Lagrasta, G. Del Duca, F. Malvolti et alii. "STENAV: GALILEO Test Bed for Interoperability Demonstration. System architecture and preliminary results" in GNSS 2003 proceedings, Graz- Austria*
- 15 *S. Lagrasta, G. Del Duca, F. Malvolti, P. De Marco "Il Sistema STENAV", in AIDAA 2003 Proceedings, Roma - Italia*
- 16 *L. Iodice, C. De Libero, S. Lagrasta, F. Malvolti: "STENAV Test bed" in "Atti dell'Istituto Italiano di Navigazione", 2002*
- 17 *S. Lagrasta et alii: "STENAV Test Bed for Interoperability Demonstration", GNSS, Siviglia, Spagna, 2001*
- 18 *S. Lagrasta et alii: "Normal Mode Magnetic Control of LEO Spacecrafts, with Integral Action", AIAA, San Diego, USA, 1996*
- 19 *S. Lagrasta et alii: "On the Design of Observers for Attitude Estimation of Geosynchronous Satellites", IAF, Graz, Austria, 1993*
- 20 *S. Lagrasta et alii: "AOC Design and S/W Problematics: a new Approach for the ARTEMIS Satellite", IAF, ESA/ESTEC, Nordvijk, Olanda, 1992*