VANESA GOMEZ GONZALEZ - Software Engineer

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Software Engineer with a total of **ten** years of professional experience as a Software Engineer in the private sector and space agencies (ESA, NASA). Highly motivated, enthusiast and high skilled professional. Experience in management of small groups. Many side projects including Robotics, Open Source, Virtual Reality, 3D Modelling, Android applications, Videogames development.

EDUCATION

BS in Computer Science – Universidad Politecnica Madrid (Spain)
Major: "Systems". Key subjects "Object Oriented Programming", "3D graphics", "Robotics". Research thesis: "**Supercomputing and parallelism in aerospace sector**".

MSc in Space Studies – International Space University (France)
Key subjects: Space Engineering, Space Sciences, Human Performance in Space, Space Applications, Space Management and Business, Space Policy, Economics and Law, Space Humanities. Overall Grade: B- (75.0 ETCS credits awarded). Internship: Curiosity Rover Tested Android controller at NASA.

PROFESSIONAL EXPERIENCE (2003 - 2015)

2014 - Present: **Software Engineer – NASA Ames, Mountain View, CA (USRA)**
- Air Traffic Management: Apply advanced computational methods (unilateral control, bilateral control…) in order to implement algorithms to optimize the flow of air traffic and sensor capabilities. 3D environments with Gazebo, Lwjgl for openGL, Awt and other Java frameworks under Eclipse and InteliJ.
- IDE EVA: The EVA Data Integration (EDI) Project was formed by NASA to address the recommendation of the EVA23 MIB (Spacewalk helmet failure 23 - Mishap Investigation Board) and to develop methods for consolidation and implementation of a centralized repository to deliver the information in a meaningful manner and support future EVA procurements. Gradle, Maven, IntelliJ….
- *NASA Advanced Supercomputing Division (NASA Earth Exchange):* Earth-system modelling and analysis tools, a scientific social networking platform for collaborative research. Global data sets and tools support a range of research areas including climate change, water and energy cycles, carbon cycles and ecosystems, atmospheric composition, and the Earth surface and interior. Supercomputing clouding. Big data analysis and visualization. Amazon AWS.
- *Intelligent Systems Division:* Develop methods and apply tools for Verification and Validation for vehicle and software health management systems. Some examples of these tools are Java (including GUI development, XML, parsing, SQL), Matlab, Simulink, Modelica, SysML, AADL and Python. Model regression testing. Parametric analysis, test case generation, report generation, knowledge and experience in Fault detection and Diagnosis.

2013 – 2014: **Software Engineer – European Space Agency, Madrid, Spain (Vega Telespazio)**
- Supported the Earth Observation data processing team (SMOS satellite). Responsible for the preparation and execution of the EO data processor validations, conducting anomaly investigations for near real time data streaming, routine operations, data quality control checks, development of ad hoc scripts for data analysis, Reporting. Java, Bash, Python, Matlab, Linux environment. Accomplished achievements like reducing the monthly report production from one week to one day automatizing the input data generation. After three months become in charge of the leadership of the Validation Team.

2013: **Software Engineer – NASA Jet Propulsion Laboratory, Pasadena, CA**
- Last module of the Master degree. Developed an Android application for one of the two Curiosity (MSL) Mars Rover Test Beds on earth. Allows the user to operate the rover with a new visual interface in an Android Nexus 7 device, enhancing its capabilities with commands sequencing and planning and also telemetry display as a function chart. Currently is the main tool used for controlling this rover. Java, Android, sockets.
- Also volunteering at JPL: Android videogame for outreach: 3D Unity based Mars rover; Android barcode scanner based on a SysML dabatase system; 3D OpenGL visual interface for FPGA.

2010 – 2012: **Software Engineer (Senior Java Developer) – Santander, United Kingdom (Vass)**
- Provided IT consulting as an expert in Java technology in the banking architecture. Expert in bank audit systems. Interfaces with Middleware. Software maintenance and applications support, integration and testing. Migration support to Aliance & Leicester bank and Corporate environment. Team leader. Banksphere, Java, webservices, Cobol.

2005 – 2010: **Software Engineer (Java Developer) – RENFE, DGT, BBVA… Madrid, Spain**

- Provided IT consulting as an expert in Java technology for many companies in different sectors (transport, police, and banking). Broad knowledge of all software life cycle (development, UML design, integration, validation, testing, maintenance, quality, managing, migration, impact analysis, reengineering). Software upgrade from WAS3.5 to WAS7.0 (with Z/OS). Software adjustment to connect to SAP R/3. Software maintenance and applications support. Resource planning and management. Auditing, electronic signature.

2003 – 2004: **Software Engineer Intern – UPM, CETEMA, BRISTOL-MYERS, Madrid, Spain**
- Internship at the library of UPM University. "Scara" (robotic arm) and "Centro de Mecanizado" (industrial robot) programming, handling and monitoring. Helpdesk and maintenance, equipment repair and installation, ADSL configuration. Data Base management over Lotus Notes. Incidence ticketing.

ENTREPRENEURSHIP

- 2014: Founder of "Vaiden Ltd". Virtual reality applications for Google I/O VR Cardboard. Demo "Loci3D Earth (Android Market)". Unity3D and Android Google Virtual Reality API integration.
- Organizer of **Space Startup Weekend** San Francisco 2015 and **Lunar Commercialization Workshop** 2016.
- Organizer at Rainbow Mansion community (www.rainbowmansion.com), co-op dedicated to organize cultural, scientific, technological events, projects (Planet Labs and OpenRov were founded in its garage).

COURSES, WORKSHOPS AND SEMINARS

- 2015: Charcoal drawing workshop at Mensa Regional Gathering.
- 2011: "Challenging **Cosmology**" – **Oxford University** (department for Continuing Education). Dr Robert Lambourne.
- 2009: "Ideame" Universidad Complutense – Young **videogames** developers meeting.
- 2009: ABAP IV for SAP course. Indra S.A.
- 2005: UPM Summer seminar: "**Space study and exploration**" directed and taught by **astronaut** Pedro Duque (La Granja de San Ildefonso, Segovia, Spain).
- 2001 - 2004: Wall Street Institute's English course.

PUBLICATIONS & CONFERENCES

- Gomez-Gonzalez V. et al. (2013) *MSL Test Bed Android Controller Application*. NASA JPL, Pasadena.
Schumann J., Gomez-Gonzalez V., Mahadevan N., Lowry M., Robinson P., Karsai G. (2014) *A Tool Chain for the V&V of NASA Cryogenic Fuel Loading Health Management*. Prognostics and Health Management Society 2014. Forth Worth, Texas.
- Gomez-Gonzalez V. et al. (2013) *Mars-X: human exploration of mars from Martian orbit*. International Space University, Illkirch, France.
- Gomez-Gonzalez V. (2012) *Paralelismo y Supercomputacion en el Sector Aeroespacial*. Universidad Politecnica de Madrid.
- Speaker at **Humans2Mars** 2013 conference in Washington DC presenting the ISU Team Project "Phobos next: exploring Mars from Martian orbit".
- Speaker at the **Robotics** section of **NASA/JPL** presenting the ISU Team Project "Mars-X: exploring Mars from Martian orbit".

MEMBERSHIP

Member of **Mensa**; Member of **WIA** (Women in Aerospace); Member of **AIAA** (American Institute of Aeronautics and Astronautics, Senior member). **IEEE**;

LANGUAGES

SPANISH: Native; ENGLISH: Fluent; FRENCH: Basic; ITALIAN: Basic

COMPUTER KNOWLEDGE

- **Programming languages**: Pascal; Basic; Visual Basic; **C++**; Delphi; Ada; Caml; Lisp; Prolog; Cobol; Html; PHP; WML; WMLScript; XML; **Java**; JavaScript; Flash; Android; Assembler; **Fortran**; Lotus notes designer; SDL; Python; Matlab; Octave; .net.
- **Web**: Bootstrap; HTML5; CSS.
- **Operative Systems**: Linux; MS-Dos; Windows; UNIX; IBM z/OS; iOS; Android; OS X.
- **Data Bases**: Dbase; Access; SQL; Interbase; PL-SQL Oracle; PhpMyAdmin; Lotus notes; MySql; DB2 UDB; TOAD; JDBC; Lamp; SQL server.
- **Cloud**: AWS EC2; RDS; S3.

- **Graphics**: Photoshop; Photodeluxe; CorelDraw; 3D Studio Max (scripts, nurbs, splines, metaballs, metamuscles, particles...); Character Studio; Lightwave; Organica; PhotoStyler; Publisher; Truespace; Spatch; Poser; Maya; Rhinoceros 3D; Unity3D. openGL; directX; Awt.
- **IDEs and frameworks**: J2EE; J2ME; MVC pattern; JDK 1.6; Netbeans; **Eclipse** WSAD and RAD; Banksphere; Webservices; Struts; Hibernate; Spring; Ajax, SoapUI; Bootstrap; Scala, Spring, Jira, Gradle, Swing, ETL, IntelliJ; Postman; Gradle; Maven.
- **QA**: IBM Page Detailer, Mercury QC battery test and scripting.
- **Version Control**: Git, Visual SourceSafe, SVN, WSAD, Tortoise, Harvest, CVS, SourceTree.
- **Networks**: Tcpdump; Comnet; Apache; Web tools (html, php, mysql, jsp...); IMS connections; IIS; Elastic Search.
- **SW Engineering Tools**: EasyCase; Visio; Visible Analyst; **UML**; Rational Rose; SysML.
- **Calculus, Electronic and Emulated Architecture**: Derive; Statgraphics; **Matlab**; Grapher; Electronics Workbench; Excel; Tcl/Tk; BSVC; PVM; VHDL; Autocad and Visual lisp for Autocad; Simulink.
- Robotics: "Scara" and "Centro de Mecanizado" (mechanized center) robots; Lego Mindstorms NXT robot; Robotic arm; Mars Rover Senseta; Gazebo.
- **Space**: Satellite Tool Kit (STK); Master-2009 for Space Debris.
- **Management**: Pivotal tracker; Jira