

Jacopo Diamanti

Astrophysicist, Data Scientist

EDUCATION AND INTERSHIPS

Sapienza University, Rome — Astrophysics

2008 - 2013

- Bachelor thesis: “Synchronous demodulation for cosmological ground-based observations”.
- Internship: Kinetic Inductance Detector design and prototype for cosmological observations at Sardinia Radio Telescope.

WORKING EXPERIENCES, TEACHING AND PROJECTS

Systems Engineer

GMSPAZIO srl

Nov 2022, ongoing, Rome.

- Modelling and simulation of 4D Aerospace scenarios.

Data Scientist/Web automation/Data mining and scraping

Freelance (Thyrus Labs)

Oct 2020, ongoing, Rome.

- Data science: from extraction to analysis (scraping, mining, statistics, visualization and efficient storage). Big Data analysis.
- Web automation: automated scraping, bots for social networks and finance. Implementation on cloud (Google Cloud and AWS) and local (Raspberry Pi)

Data scientist

2Hire srl

Jun 2018 - Jul 2020, Rome.

- Design, test and release of the new Big Data platform.
- Data analytics and visualization for vehicle fleet management and insights.
- Driving styles classification from onboard sensors data.
- Usage of GIS for geodata handling.

HW and SW developer

Spacearth Technology srl (National Institute of Geophysics and Volcanology)

Jan 2015 - Apr 2017, Rome

1. Design and production of a submarine observatory for European Multidisciplinary Seafloor and water column Observatory (EMSO Medit). HW production, firmware development (uC in C and FPGA in VHDL)
- 2 - Attitude Control System realization for balloon-borne cosmological experiments: electronic design and test, prototype, software implementation.

Teacher

UPTER - Università Popolare di Roma

Sep 2014 - Jul 2019, Rome

- 1 - Arduino and Microcontrollers: 24 hours course (beginners and advanced)

LANGUAGES

Italian (n.l.), English, French

KEYWORDS

Astrophysics, STEM, outreach, teaching, Arduino, Raspberry Pi, electronics, programming, data analysis, data mining, data scraping, big data.

- 2 - Raspberry and the Internet of Things: 16 hours course
- 3 - Astronomy and astrophotography: 24 hours course (beginners and advanced)

Teacher and tutor

IED – European Institute of Design

Sep 2015 - Jul 2017, Rome

- 1 - Interaction Design with Arduino: teacher, 40 hours course
- 2 - Robotics: tutor, 40 hours course
- 3 - Light Design and Photography: tutor, 40 hours course

STEM AND OUTREACH ACTIVITIES

Fablab STEM coach

Fablab Innovation Gym – Fondazione Mondo Digitale

Jan 2015, Jul 2018, Rome

- 1 - Physics and Arduino: workshop for high school teachers, 8 hours.
- 2 - Assistant for digital production: 3D printing, laser cutting, CNC.
- 4 - Mentor at Codemotion Hackathon, Rome 2016.
- 5 - Mentor at Cisco IoT Hackathon, Rome 2017.
- 6 - Intel School Makers: Intel Curie workshop for teachers, Rome 2017.
- 7 - Wearable tech workshop for stylists at “Fashion Digital Night Rome 2019”.

INDEPENDENT PROJECTS

Co-founder

ovunQue.io – Internet of Things network

Mar 2017, May 2020, Rome

- 1 - Big data platform development
- 2 - Study on communication protocol safety over MQTT
- 3 - Lora, Sigfox and wifi hardware implementation

DATA SCIENCE SKILLS

- **IDE/Tools:** Jupyter notebook, Atom, pyCharm
- **MINING & SCRAPING:** Request, Selenium, BeautifulSoup, bash scripting, MQTT crawling. Also applied to Facebook, Twitter, Reddit.
- **ANALYSIS:** Numpy, Pandas, SciKit-Learn, Keras, TinyML, NLP, sentiment analysis with custom scripts (Italian and English language)
- **VISUALIZATION:** GNUplot, Matplotlib, Bokeh, pyGame
- **CLOUD COMPUTING:** Google Cloud, Amazon S3
- **DOCUMENTATION:** LaTeX, LyX
- **GEODATA:** Folium, Snap, GIS
- **COMPUTER VISION:** OpenCV 2

OTHER SKILLS

Hardware

- **Microcontrollers used:** Arduino family, Intel Curie, ESP8266 and Nordic family. BT, LORA and Sigfox protocols.
- **FPGA used:** Xilinx evaluation boards (MicroZed and PicoZed).
- **Single-board Computers used:** Raspberry Pi 3, Intel Edison, Intel Galileo.
- **Machines knowledge:** 3D printer, laser cut, CNC.

Software

- **OS:** Linux, Windows
- **Programming languages:** C, Python, Fortran, Mathematica
- **Data tools:** SQL, influxDB, Apache Spark, Apache Arrow
- **Astronomical DB:** Aladin, Simbad, VizieR, Copernicus Data Hub (Snap)

- Electronics: Eagle, Kicad, Pspice, Sonnet (Microwave electronics)

CERTIFICATIONS, LICENCES AND PRIZES

- Runner-up at ESA “Be an INTEGRAL astronomer” competition, 2009
- Ham Radio Operator license (IZoYNK), 2012
- Maker of merit prize, nTheractive Ecobox, Maker Faire Rome 2016
- Accenture Digital Hackathon, first prize, 2015
- Postehack IoT Hackathon, first prize, 2019