

Curriculum Vitae et Studiorum

Personal information

First name / Surname **Thomas Vassallo**
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Work experience, education and training

- Mar 2022 - Present **Software developer**
Ludwig Maximilians University - Scheinerstraße 1, 81679 Munich, Germany
Software development for the ground segment of Euclid.
- Jan 2022 - Feb 2023 **Research fellow (AdR)**
INAF-OATs - Via Tiepolo 11, 34143 Trieste (TS), Italy
Software development and optimization for the ground segment of Euclid.
Development, maintenance and operation of the data reduction pipeline of Euclid
V&V of software products
Software documentation and reviewing
Management of software development projects
Communication and dissemination
- Dec 2015 - Dec 2021 **Software developer**
Ludwig Maximilians University - Scheinerstraße 1, 81679 Munich, Germany

Software development for the ground segment of Euclid. Management of the Euclid computing infrastructure at LMU.

Design and development of software modules for the data reduction pipeline of Euclid

- Design of the algorithms
- Implementation of prototype solutions
- Testing and validation
- Development of pipeline-quality software packages

V&V

Software documentation and reviewing

Communication and dissemination

System administration tasks to run the CosmoDM computing cluster at the physics department of the LMU

Aug 2015 – Nov 2015

PhD student in Astrophysics - International Max Planck Research School

Max Planck Institut für Astrophysik, Karl-Schwarzschild-Str. 1, 85748 Garching, Germany

Interpretation of stellar populations of galaxies in the low surface brightness limit.

Design a classification algorithm for stellar populations in nearby galaxies

IMPRS activities (conferences, seminars, journal clubs)

Apr 2013 – Jul 2015

Scientific Software Developer (Scholarship)

INAF-OATs - Via Tiepolo 11, 34143 Trieste (TS), Italy

Software development for the data analysis pipeline of Planck-LFI.

Development of the calibration and data reduction pipeline of Planck-LFI

Characterization and removal of systematic effects

E2E testing of the pipeline

Production of the CMB maps in temperature and polarization

Null-testing of the data products

Jan 2013 – Apr 2013

Postman

Deutsche Post, Arnulfstraße 195, 80634 Munich, Germany

Sep 2009 – Sep 2012

Master Degree in Astrophysics

University of Milan, 7 via Festa del Perdono, 20122 Milano (MI), Italy

Principal subjects covered: Astrophysics, Cosmology, Electrodynamics, Dynamics of galaxies, Laboratories of Space Instrumentation, Plasma physics, General Relativity, Nuclear Astrophysics, Advanced Mathematical Methods

Title of the thesis: *Study of the effects of the interstellar dust on the high energy emission of a magnetar*

Supervisors: P. Pizzochero (University of Milan), S. Mereghetti (IASF-Milano), A.Tiengo (IUSS-Pavia)

Level in national classification: 105/110

Sep 2005 – Jul 2009

Bachelor Degree in Physics

University of Milan, 7 via Festa del Perdono, 20122 Milano (MI), Italy

Principal subjects covered: Classical Physics, Mathematical Analysis, Statistical Physics, Quantum Mechanics, Structure of Matter, Nuclear Physics, Linear Algebra, Thermodynamics, Physics of Proteins, C++ Programming and Data Analysis, Laboratories.

Title of the thesis: *Anomalous finite-size effects in the Chinese Restaurant Process*

Supervisors: B. Bassetti, M. Cosentino-Lagomarsino (University of Milano)

Level in national classification: 101/110

Sep 2000 – Jul 2005

High School Diploma

Liceo Scientifico G.B. Grassi in Lecco, Largo Montenero 3, 23900 Lecco (LC), Italy

Principal subjects covered: Mathematics, Italian Literature, Latin Literature, History, Philosophy, Natural Sciences, Foreign Language (English)

Level in national classification: 86/100

Skills and competences

Mother tongue

Italian

Other languages

English

German

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
Advanced	Advanced	Advanced	Advanced	Advanced
Advanced	Advanced	Good	Good	Good

TOEFL ibt

Total scores: 99/120. Test date: 27/09/2014

Data analysis and signal processing

- Tools for Time-Ordered Information (TOI) processing
 - Systematic effects characterization, simulation, removal
- Tools for image processing
 - processing of exposures to de-trended and calibrated images
 - defects removal, astrometric and photometric calibration, co-addition of overlapping images
 - position-dependent PSF modeling for stacked images.

Software design and optimization

- Refactoring
 - Porting of legacy code
 - design (Object Oriented Programming)
- Maintenance and deploy
 - version control (git), Continuous Integration (GitLab, Jenkins), containerization (VM, docker, singularity)
- SW Optimization
 - HPC optimizations (distributed-MPI, parallel-OpenMP)
 - Code profiling (cProfile)
 - Code Metrics (SonarQ)
- SW validation
 - Map requirements to test cases, from software test specifications
 - Development of a common software infrastructure for test cases
 - Full requirements to software components to test cases traceability matrices
- Documentation and reviewing
 - Validation Plan and Software Test Specification Documents
 - Software maturity assessment
 - Software Test Report documents

Data modeling

- XML Schema languages
- FITS and HDF5 data organization

Data analysis infrastructure design and maintenance

- Installation, configuration and maintenance of Linux computing cluster
 - Data Storage (file servers, RAID storage systems)
 - computing nodes
 - UPS
 - network interfaces (IPs, routing)
 - network file system (NFS)
- Data processing and distribution
 - resource optimization and distribution (PBS, Slurm, HTCondor, cron, globus, uberFTP)
- System administration
 - OS installation.
 - Management of the users (ldap).
 - Setup of incremental backup system (IBM Tivoli)
- Oracle Database (installation, configuration, migration)

Communication and dissemination

- Invited talks at international conferences
 - *SourceExtractor++: application to EXT-Stage2 validation* - Euclid Meeting 2021 - Lausanne, Switzerland, 27 May 2021
 - *EXT-Stage2 PSF Modeling for the Coadds* - 21st Euclid Garage Day - APC Paris FR, 25 to 26 Feb 2020
 - *EXT photometric and astrometric repeatability* - Euclid Meeting 2019 - Helsinki FI, 4 to 7 June 2019
 - *EXT-Stage2 PSF stacking* - Euclid Meeting 2019 - Helsinki, Finland, 4-7 June 2019
 - *EXT-Stage2 PSF stacking* - 18th Euclid Garage Day - Leiden NL, 8-9 Nov 2018
 - *OU-EXT-Stage2 design* - Euclid Meeting 2018 - Bonn, Germany, 11-14 June 2018
 - *Detection and removal of artifacts in astronomical images* - Euclid Meeting 2016 - Lisbon, Portugal, May 30 - June 03 2016
- Poster sessions
- Seminars
- Outreach

Other skills

programming/scripting languages	Python 2.x and 3.x, C++, bash, IDL
SQL	OracleSQL, MySQL
version control systems	git, SVN
continuous integration	jenkins
interactive computing	jupyter notebook
quality control	SonarQ
virtualization	VirtualBox
containerization	Docker, Singularity
high-throughput computing	HTCondor
collaborative development	gitLab, redmine, jira, slack
teleconferencing	zoom, discord, skype, google meet, BlueJeans, teams
grid computing	uberFTP, globus, artools
file transfer	scp, rsync, gridFtp, uberFtp
network services	ssh, vnc, nfs
job scheduling	Slurm, PBS
system management	Idap
database	Oracle Database, mariaDB, django
office productivity software	OpenOffice, MSOffice, LaTeX, overleaf
incremental backup system	IBM Tivoli Storage Manager
documentation	Doxygen
UML	UMLet, diagrams.net
data visualization	Topcat, ds9, FitsView, matplotlib
software for astrophysics	XSPEC (X-Ray Spectral Fitting Package), HEALPIX, GRASP, AstrOmatic (SWarp, SExtractor, PSFEx, skymaker, SourceXtractor++)
Software for Euclid project	ERun, EuclidWrapper
development framework	django, Elements
IDE	Visual Studio Code, Eclipse
Operating Systems	Linux (CentOS, Ubuntu, Mint), MacOS

Other information

Appointed roles in the Euclid Consortium	<p>OU-EXT validation co-lead (2016-2021)</p> <p>Technical reviewer of OU-PHZ in the Ground Segment Readiness Review (2022)</p> <p>Technical reviewer of OU-LE3-2PCF-WL in the Ground Segment Readiness Review (2022)</p> <p>Technical reviewer of OU-LE3-CM-2PCF-WL in the Ground Segment Readiness Review (2022)</p>
Management of software projects	<p>development of the template-fitting photometry tool used by OU-MER;</p> <p>development of the data reduction pipeline of one of the external ground-based surveys needed for the Euclid photo-z estimation (the Dark Energy Survey, DES). Creation of the de-trended and calibrated DES single-epoch images and ingestion in the Euclid Archive System;</p> <p>development of a photometric calibration technique of DES single epoch images from Gaia G, BP and RP bands;</p> <p>development of the software module used for the removal of transient artifacts (such as cosmic rays, satellite trails and scattered light) from optical images;</p> <p>development of the software module used for the computation of the effective PSF model for stacked images;</p> <p>development of the background subtraction module for the Euclid Libraries;</p> <p>development of the software package to compute and validate the tiling solution for the Euclid Science Ground Segment processing;</p>
International collaborations	<ul style="list-style-type: none">• Member of the Euclid Consortium (2015-present)• Member of the Planck collaboration (2013-2015)
Awards	<p>Productivity award from the Ludwig Maximillians Universität Munich for year 2017.</p> <p>In 2022 I was granted the status of Euclid Builder by the Euclid Consortium Board. https://www.euclid-ec.org/?page_id=5134</p>
Driving licence	B

Trieste, 29.04.2024