

ANDREA AZZARELLI

Department of Mathematics and Computer Science, Via Ospedale, 72, 09124, Cagliari, Italy
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EDUCATION

PhD student | *Mathematics and Computer Science*

University of Cagliari

Oct. 2024 –
Cagliari, Italy

- **Curriculum:** Mathematics
- **Advisor** Prof. [Alessandro Buccini](#)
- **CoAdvisor** Prof. [Giuseppe Rodriguez](#)
- **Visiting student experience** at Kent State University (OH), USA
Subject: Research on inverse problems, archaeological application
Duration: 2 months
Supervisor: Prof. L. Reichel

Master Degree | *Mathematics*

University of Cagliari

Sep. 2020 – Sep. 2023
Cagliari, Italy

- **Curriculum:** Applied Mathematics
- **Final grade:** 110/110 *cum laude*
- **Thesis:** [Vector extrapolation techniques applied to regularization parameter's choice for solving linear ill-posed problems.](#)

Training internship

Department of Mathematics and Computer Science, UniCa

Apr. 2023 – May 2023
Cagliari, Italy

- **Subject:** Development of algorithms implementing extrapolation techniques, with particular reference to their application to the resolution of inverse problems and the estimation of regularization parameters. Numerical experiments concerning the processing of geophysical data.
- **Duration:** 75 hours
- **Tutor:** Prof. [Giuseppe Rodriguez](#)

Bachelor Degree | *Mathematics*

University of Cagliari

Sep. 2017 – Sep. 2020
Cagliari, Italy

- **Final grade:** 110/110 *cum laude*
- **Thesis:** [Polynomial interpolation](#)

RESEARCH AND TEACHING EXPERIENCES

Research grant

University of Cagliari

May 2024 – Sep. 2024
Cagliari, Italy

- **Title:** Mathematical models for glyph extraction
- **Area:** 01 - Mathematics and Computer Science
- **Sector:** 01/A5 Numerical analysis – SSD: MAT/08
- **Scientific coordinator:** Prof. [Alessandro Buccini](#)

Research scholarship

University of Cagliari

Dec. 2023 – Apr. 2024
Cagliari, Italy

- **Title:** Determination of the regularization parameter using extrapolation techniques with application to geophysics.
- **Scientific coordinator:** Prof. [Giuseppe Rodriguez](#)

Teacher, 64 hours University of Cagliari	2023, 2024 Cagliari, Italy
<ul style="list-style-type: none"> · Faculty: Biology and Pharmacy · Course: Biology · Teaching: Mathematics and Statistics 	
Tutor, 30 hours University of Cagliari	2023–2025 Cagliari, Italy
<ul style="list-style-type: none"> · Faculty: Engineering and Architecture · Course: Electronic, Computer and Telecommunication Engineering · Teaching: Applied Mathematics 	
Tutor, 30 hours University of Cagliari	2022 Cagliari, Italy
<ul style="list-style-type: none"> · Faculty: Science · Course: Mathematics · Teaching: Geometry 4 	

TALKS

ADMM for nuclear norm minimization: an archaeological application	Oct. 2025 Bologna (Italy) MIVA25
A. Azzarelli, A. Buccini, A. El Hachimi, L. Reichel	
Reconstructing Archaeological Engravings with Low-Rank Variational Models	Jul. 2025 Montréal (Canada) SIAM AN25
A. Azzarelli, A. Buccini, A. El Hachimi, L. Reichel	
Fractional Laplacian and ADMM for petroglyph extraction	May. 2025 Kent, OH (USA) Seminar
A. Azzarelli, A. Buccini	
Fractional Laplacian and ADMM for glyph extraction	Jan. 2025 Pisa (Italy) DGGALNA25
A. Azzarelli, A. Buccini	
Fractional Laplacian and ADMM for glyph extraction	Jan. 2025 Cagliari (Italy) Seminar
A. Azzarelli, A. Buccini	
Fractional Laplacian and ADMM for glyph extraction	Dec. 2024 Rabat (Morocco) Maths and Dec. 24
A. Azzarelli, A. Buccini	
Vector extrapolation techniques for the regularization of ill-posed problems	Sep. 2024 Luminy (France) NLACIRM24
A. Azzarelli, C. Brezinski, C. Fenu, M. Redivo-Zaglia, G. Rodriguez	
Vector extrapolation methods for the regularization of ill-posed problems	Jul. 2024 Napoli (Italy), GIMC-SIMAI Y. 24
A. Azzarelli, C. Brezinski, C. Fenu, M. Redivo-Zaglia, G. Rodriguez	
A variational model for glyph extraction	Apr. 2024 Cagliari, AMALART24
A. Azzarelli, A. Buccini	

POSTERS

- Archaeological engraving recognition with a variational model based on low-rank and sparse splitting** Jul. 2025
Cagliari (Italy) [CSMM26](#)
A. Azzarelli, A. Buccini, A. El Hachimi, L. Reichel
- Low-Rank and sparse splitting for glyph extraction** Oct. 2025
Pula, (Italy) [AQuA25](#)
A. Azzarelli, A. Buccini, A. El Hachimi, L. Reichel

ATTENDED CONFERENCES

- Challenges and Advances in Numerical Analysis** Jun. 2023
Cagliari, Italy

OTHER RESEARCH PROJECTS AND SCHOOLS

INdAM projects

- Numerical techniques for large dimension problems (participant) (2025)
- Numerical linear algebra for large dimension problems: theoretical aspects and applications (participant) (2024)

- Numerical Linear Algebra for Ill-Posed Problems** 10-13 Jun. 2019
Summer school held by prof. [L. Reichel](#) (Kent State University) Cagliari, Italy

PUBLICATIONS

- [1] A. Azzarelli, C. Fenu, C. Brezinski, M. Redivo-Zaglia and G. Rodriguez, *Parameter choice rules for discrete ill-posed problems based on extrapolation methods*, J. Sci. Comput., 103 (2025), p.9.
- [2] A. Azzarelli and A. Buccini, *A variational model for glyph extraction, theoretical aspects and implementation*, (2025) (submitted).
- [3] A. Azzarelli, A. Buccini, A. El Hachimi and L. Reichel, *Low rank and sparse splitting for glyph extraction*, (2026) (submitted).
- [4] F. Arrigo, A. Azzarelli and A. Buccini *Community detection for image segmentation* (working title, in progress).
- [5] A. Azzarelli and A. Buccini, *Blind regularization operator for $\ell_2 - \ell_q$ minimization* (working title, in progress).

LANGUAGES

Italian

Native

English

[B2 Badge](#)

Apr. 2023
Cagliari, Italy