



Alberto Arturo Vergani

Curriculum Vitae

Virtus non timet quod facit

Introduction

Job profile **Computational neuroscientist**

Main topics *Modeling, algorithms and data-analysis for brain's multi-scale spatio-temporal features*

Short biography I was born in Italy (Gallarate, September the 22nd, 1986) and I have been studying Neuroscience at University of Vita-Salute San Raffaele (BSc, 2007-2011), Cognitive Science at University of Milan (MSc, 2011-2014) and Computer Science and Mathematics at University of Insubria (PhD, 2015-2018).

Alongside that education, I spent time in other international institutes shaping my background towards scientific computing, computational intelligence, brain simulation, neuromorphic computing, mathematical psychology and, in general, the relations between theory of computing and theory of cognition.

During the first postdoc experience (2019-2020), I have been working on neuromorphic simulations in London at Middlesex University (Chris Huyck's lab) with a fellowship by The Human Brain Project.

Nowadays, I am doing the second postdoc experience (2020-2021) in Marseille at Institut de Neurosciences de la Timone (Frederick Chavane's lab), Aix-Marseille University, working on modelling and simulation of V1 mammal cortex, with classic and HBP EBRAINS neuromorphic infrastructures, funded by a fellowship from French ANR Horizontal-V1.

For more information, see the detailed biography section.

Brain/Mind Interests Computational Neurobiology, Theoretical Neuroscience, structural and functional Neuroimaging, Electrophysiology, Brain-Computer Interface, Human-Machine Interaction, Cognitive modeling, Psychology, Antropology, Philosophy, Linguistics

Computational Interests Neuromorphic computing, Network Theory, Artificial Intelligence, Soft Computing, Applied Many-value Logics, Numerical Mathematics, Machine Learning, Multivariate Analysis, Probability and Statistics, Signal/Image Processing, Data Mining

Links ResearchGate | Google Scholar | website | ORCID:0000-0002-6572-0434 | Github

Prizes, Grants and Fellowships

- 2020-2021 Postdoctoral fellowship at INT Marseille (FR) by French ANR Horizontal-V1
- 2019-2020 Postdoctoral fellowship at Middlesex University (UK) by The Human Brain Project (HBP)
- 2018 Best Conference Paper with the Taylor and Francis prize for the section *Imaging and Visualization* at the 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization (CMBBE2018, Lisbon, 26-28 March 2018).
- 2016 - 2018 Travel Grants by Human Brain Project (HBP)
- 2014 - 2016 Travel Grants by Partnership for Advanced Computing in Europe (PRACE)
- 2015 - 2018 Italian PhD Fellowship
- 2012 Civil recognition by the Major of Cairate (VA)

Present position

2020-2021 **Postdoctoral researcher**

College University of Aix-Marseille, Marseille, FR

Division Institut de Neurosciences de la Timone

Lab NeOpTo group, headed by Prof. Frederic Chavane

Supervisor Prof. Laurent Perrinet

Project *Visual cortex modelling with classic and neuromorphic machines*

Fund Fellowship from French ANR Horizontal V1

- Topics
- i) Primary visual cortex modeling and simulations
 - ii) Sensory-evoked traveling waves and dynamic neuronal association fields
 - iii) Optical imaging, psychophysics and neural basis of Gestalt principles
 - iv) Mean-Field Models, Point-Neuron Models and Predictive coding

Past positions

2020-2021 **Postdoctoral researcher**

College Middlesex University, London, UK

Division Department of Computer Science

Lab Chris Huyck's lab

Supervisor Prof. Chris Huyck

Project *Neuromorphic Embodied Agent That Learn*

Fund Fellowship from Horizon 2020 grant No 720270 (The Human Brain Project).

- Topics
- i) Cognitive agents modeling with spiking neural networks
 - ii) Neuromorphic simulations via HBP infrastructures (SpiNNaker and BrainScaleS)
 - iii) Cell assemblies theory and models
 - iv) Attractor networks and dynamical systems

2015-2018 **Early Stage Researcher (ESR)**

Degree PhD in Computer Science and Computational Mathematics

College University of Insubria, Varese, IT

Division Department of Theoretical and Applied Science

Lab CRAIIM group, headed by Prof. Elisabetta Binaghi

Supervisor Prof. Elisabetta Binaghi

Project *Computational Intelligence Applications in Functional Neuroimaging*

Fund Fellowship from Italian Ministry of Education and Research

- Topics
- i) Computational intelligence and soft computing
 - ii) Unsupervised learning algorithms
 - iii) Structural and functional MR image processing and analysis
 - iv) Neuroscientific applications of soft techniques

2014 **Master thesis internship**

Degree MSc in Cognitive Science, curriculum in Decision Processes

College University of Milan, IT

Lab Raffaella Folgieri's lab

Supervisor Prof. Raffaella Folgieri

Project *Electrophysiological data analysis acquired via Brain-Computer Interface*

- Topics
- i) Brain-Computer Interface (BCI)
 - ii) Spatio-temporal data analysis
 - iii) Electrophysiology
 - iv) History of Artificial Intelligence (co-supervisor: Prof. Gianfranco Prini)

2010 **Bachelor thesis internship**

Degree BSc in Psychology, curriculum in Neuroscience

College Vita-Salute San Raffaele University, Milan, IT

Division Nuclear Medicine Unit

Supervisor Prof. Daniela Perani

Project *State of the art about the brain and cognitive reserve hypothesis*

- Topics
- i) Brain and Cognitive reserve hypothesis
 - ii) Literature overview
 - iii) Neuroradiology
 - iv) Brain Plasticity

Collaborations

2020-now **Prof. Stefania Boffa, University of Milano-Bicocca, IT**

- Joint topics
- i) Many-valued logics calculus
 - ii) Fuzzy and rough set theory
 - iii) Mathematics of machine learning
 - iv) Neuroscientific applications of novel soft models

2019-now **Prof. Chris Huyck, Middlesex University, London, UK**

- Joint topics
- i) Cognitive agents modeling with spiking neural networks
 - ii) Neuromorphic simulations via HBP infrastructures (SpiNNaker and BrainScaleS)
 - iii) Cell assemblies theory and models
 - iv) Attractor networks and dynamical systems

2018-now **Prof. Samuele Martinelli, MIUR, IT**

- Joint topics
- i) Crisp and fuzzy clustering algorithms validation
 - ii) Formal analysis of clustering metrics
 - iii) Ground truth data generation
 - iv) Neuroscientific applications of soft techniques

2015-now **Prof. Elisabetta Binaghi, University of Insubria, Varese, IT**

- Joint topics
- i) Computational intelligence and soft computing
 - ii) Unsupervised learning algorithms
 - iii) Structural and functional MR image processing and analysis
 - iv) Neuroscientific applications of soft techniques

Visiting Research Periods

May 2019 **Kirchhoff-Institut für Physik, Heidelberg, DE**

Tutor Prof. Sebastian Smith

- Topics:
- i) Induction on the BrainScaleS neuromorphic hardware
 - ii) Implementation of a Finite State Machine on BrainScaleS

Spring 2018 **Middlesex University, London, UK**

Tutor Prof. Chris Huyck

- Topics:
- i) Induction on the Neuromorphic Computing Platform of Human Brain Project (HBP)
 - ii) Modeling of neurocognitive agents by using PyNN, Nest and sPyNNaker

Fall 2017 **CNR, Institute of Biophysics, Palermo, IT**

Tutor Prof. Michele Migliore

- Topics:
- i) Induction on the Brain Simulation Platform of Human Brain Project (HBP)
 - ii) Modeling cellular level model of the hippocampus with NEURON and python.

Education

2018 **PhD in Computer Science and Mathematics**

College University of Insubria, Varese, IT

Thesis *Contributions in computational intelligence with results in functional neuroimaging*

Supervisor Prof. Elisabetta Binaghi

2014 **MSc in Cognitive Science**

College University of Milan, Milan, IT

Thesis *Computational science and emergent neuroinformatics technologies*

Supervisors Prof. Raffaella Folgieri and Prof. Gianfranco Prini

2011 **BSc in Psychology**

College Vita-Salute San Raffaele University, Milan, IT

Thesis *The reserve of cognitive functions in dementia*

Supervisor Prof. Daniela Perani

2007 **Diploma in Electronics and Telecommunication Engineering**

College High school in Busto Arsizio, IT

Project *Design and assembly of a thermostatic system*

Supervisors Prof. Bau and Prof. Maini

Integrated Education in Computational Neuroscience

Workshops

May 2021 Workshop on Energy and entropy concepts to understand brain activity, EITN

March 2021 8th Annual Neuro-Inspired Computational Elements (NICE)

March 2021 Multisite recordings and distributed representations in the macaque brain, EITN

Dec 2020 Brainhack Marseille, France

Jan 2020 Modeling Brain Signals, EITN, Paris, France

Sept 2019 9th HBP Workshop on Neuromorphic computing, Manchester, UK

March 2017 Intellectual property of Research Results, University of Insubria, Como, Italy

March 2017 Mathematical Methods for Image Analysis, RISM, Varese, Italy

June 2016 Brain, Minds and Machines, MIT/IIT, Sestri Levante, Italy

Jan 2016 3rd Human Brain Project Workshop, Manchester, UK

Schools

Sept 2021 (planned) Medical Neuroimaging, Aix-Marseille University, FR

July 2021 Neurophysiology and Biophysics, University of Pavia, IT

May 2018 Numerical Methods for Inverse Problems, University of Insubria, Como, Italy

July 2017 Applied Harmonic Analysis, University of Genova, Italy

July 2017 Advanced Numerical Techniques, University of Cagliari, Italy

- Dec 2016 3rd Human Brain Project School, Obergurgl, Austria
- Sept 2016 Integrability, Recursion, Geometry and Mechanics, RISM, Varese, Italy
- Sept 2016 HPC School, PRACE, Jhoannes Kepler University, Linz, Austria
- Spring 2015 Physics of Complex Systems, ICTP, Trieste, Italy
- Oct 2014 Scientific Visualization, PRACE, CINECA, Bologna, Austria
- Sept 2014 Parallel Computing, PRACE, CINECA, Milan, Italy

Courses

- July 2021 Introduction of Glial cells, European Meeting on Glial Cells, online
- Sept 2017 Introduction to Neuroinformatics, INCF, Reading, UK
- August 2017 8th G-Node Neural Data Analysis, INCF, Munich, Germany
- Oct 2015 Tools for Massive Data Analysis, PRACE, CINECA, Milan, Italy
- June 2015 Online course on Complexity, Santa Fe Institute, New Mexico, USA
- June 2015 Paradigms for Hybrid Architectures, PRACE, CINECA, Bologna, Italy
- March 2015 Python, PRACE, CINECA, Milan, Italy
- March 2015 C++, PRACE, CINECA, Milan, Italy
- Feb 2015 HPC Simulation, PRACE, BSC, Barcelona, Spain
- Jan 2015 Fortran, PRACE, CINECA, Rome, Italy
- Dec 2014 Online course on Dynamical Systems, Santa Fe Institute, New Mexico, USA
- Nov 2014 CUDA and GPGPU, PRACE, CINECA, Milan, Italy

PhD Classes

- Spring 2017 Systems, Modeling and Simulations, University of Insubria, Ing. Habib Sedehi
- Spring 2016 Deep Learning, University of Insubria, Prof. Paolo Frasconi
- Fall 2015 Data Mining, University of Insubria, Prof. Claudio Gentile

Academic Information

Chairing

- Oct 2019 Co-Chair with Prof. Joao P. Papa at VipIMAGE Conference, Porto (Portugal)
- Oct 2017 Co-Chair with Prof. Bart Romeny at VipIMAGE Conference, Porto (Portugal)
- Nov 2016 Chair of Prof. Sean Hill at 3rd HBP School in Obergurgl (Austria)
- Jan 2016 Chair of Prof. Eicker at 3rd HBP Workshop in Manchester (UK)

Reviewing

- From 2020 Reviewer of IEEE Transactions on Emerging Telecommunications Technologies
- From 2018 Reviewer of IEEE Access journal
- From 2016 Reviewer for OHBM conferences
- From 2015 Reviewer of BSc/MSc/PhD thesis

Teaching

- 2021 PhD class on Computational Neuroscience, University of Marseille, FR
- 2016-2018 Laboratory of Artificial Intelligence for High School, University of Insubria, IT

Tutoring, co-supervisions and supervisions

- 4 BSc Thesis in Computer Science
- 3 MSc Thesis in Computer Science
- 1 MSc Thesis in Neuroscience
- 1 PhD Thesis in Computer Science

Memberships

- 2020-now Federation of European Neuroscience Societies (FENS)
- 2020-now Société des Neurosciences (SdN)
- 2019-now IEEE Computer Society (CS)
- 2017-Now IEEE Computational Intelligence Society (CIS)
- 2017-Now American Computer Machinery Society (ACM)
- 2016-Now Organization of Human Brain Mapping (OHBM)
- 2016-Now European Society for Fuzzy Logic and Technology (EUFLAT)

References

- Prof. Frederic Chavane, University of Marseille, FR (frederic.chavane@univ-amu.fr)
- Prof. Laurent Perrinet, University of Marseille, FR (laurent.perrinet@univ-amu.fr)
- Prof. Chris Huyck, Middlesex University, London, UK, (c.huyck@mdx.ac.uk)
- Prof. Elisabetta Binaghi, University of Insubria, Varese, Italy, (elisabetta.binaghi@uninsubria.it)
- Prof. Marco Donatelli, University of Insubria, Varese, Italy (marco.donatelli@uninsubria.it)
- Prof. Michele Migliore, CNR, Institute of Biophysics, Palermo, Italy (michele.migliore@cnr.it)
- Prof. Raffaella Folgieri, University of Milan, Milan, Italy (raffaella.folgieri@unimi.it)
- Prof. Gianfranco Prini, University of Milan, Milan, Italy (gianfranco.prini@unimi.it)
- Prof. Daniela Perani, San Raffaele University, Milan, Italy (perani.daniela@univr.it)

Presentations

Conference Speeches

- Oct 2019 *Comparison of validity indexes for fuzzy clusters of fMRI data*, VII ECCOMAS Thematic Conference On Computational Vision And Medical Image Processing, VipIMAGE, Porto, Portugal (16-18 October 2019)
- July 2018 *A Soft Davies-Bouldin Separation Measure*, IEEE International Conference on Fuzzy Systems, FuzzIEEE 2018, Rio De Janeiro, Brazil (08-13 July 2018)
- July 2018 *Clustering Functional MRI Patterns With Fuzzy and Competitive Algorithms*, 6th International Symposium CompIMAGE 2018 (Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications), Cracow, Poland (2-5 July 2018)

- March 2018 *Resting State fMRI Functional Connectivity Analysis Using Soft Competitive Learning Algorithms*, CMBBE2018: 15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 3rd Conference on Imaging and Visualization, Lisbon, Portugal (26-29 March 2018)
- Oct 2017 *Cluster Analysis of Functional Neuroimages Using Data Reduction and Competitive Learning Algorithms*, VI ECCOMAS Thematic Conference On Computational Vision And Medical Image Processing, VipIMAGE, Porto, Portugal (18-20 October 2017)

Seminars

- Feb 2021 On "Long-range and local circuits for top-down modulation of visual cortex processing" by Zhang, Siyu, et al, NeOpto Team Journal Club, Institut de Neurosciences de la Timone (INT), Aix Marseille University, Marseille, France
- October 2020 On "The Hidden Spatial Dimension of Alpha: 10-Hz Perceptual Echoes" by Lozano-Soldevilla and VanRullen, NeOpto Team Journal Club, Institut de Neurosciences de la Timone (INT), Aix Marseille University, Marseille, France
- June 2020 On "Paradoxical Effects of External Modulation of Inhibitory Interneurons" by Tsodyks et al 1997, NeOpto Team Journal Club, Institut de Neurosciences de la Timone (INT), Aix Marseille University, Marseille, France
- April 2020 Introduction to the NeOpto Team, NeOpto Team Journal Club, Institut de Neurosciences de la Timone (INT), Aix Marseille University, Marseille, France
- Nov 2019 Comparison of Validity Indexes for Fuzzy Clusters of fMRI Data, Middlesex University, London, UK
- Feb 2019 Discussion on Functional Connectivity in fMRI and its relation with Cell Assembly Hypothesis, Middlesex University, London, UK
- May 2018 Spectral Analysis of RS-fMRI Images, Villa del Grumello, Como, Italy
- July 2017 Gender Differences in RS-fMRI Images, University of Genoa, Genoa, Italy
- Jan 2016 The Human Brain Project (topics from the HBP workshop in Manchester (UK)), University of Insubria, Varese, Italy

Short Talks

- Jan 2021 *Hot Coffee: Associative Memory with Bump Attractor Cell Assemblies of Spiking Neurons*, HBP Tea and Slides, session VIII, Online meeting (14 January 2021) [Video]
- May 2020 *Implementation of Embodied Agents in Nest, SpiNNaker and BrainScaleS*, Human Brain Project SP9 Quarterly in-person Meeting, University of Hertfordshire, Hatfield, UK (22-23 May 2019)
- Jan 2016 *Computational intelligence methodologies applied to fMRI big data*, 3rd HBP Education Workshop, Manchester, UK (11-15 January 2016) [Video]
- Dec 2016 *fMRI data analysis with activation weighted vectors technique*, 3rd Human Brain Project School, Obergurgl, Austria [Video]

Posters

- May 2021 *Modulation of neuronal anticipatory activity in a topographical model of V1*, NeuroFrance 2021 (18-21 May 2021)

- March 2021 *Critical Limits in a Bump Attractor Network of Spiking Neurons*, 8th Annual Neuro-Inspired Computational Elements (NICE) (17-20 March 2021)
- Jan 2020 *Counting temporal classes in resting state fMRI data*, 4th HBP Student Conference, Pisa, Italy (21-22 January 2020)
- Feb 2017 *Quantitative Relations of CRAIIM Human Brain Atlas*, 1st Human Brain Project Student Conference, Vienna (Austria) (08-10 February 2017)
- Dec 2016 *fMRI Data Analysis With Activation Weighted Vectors (AWV) in Functional Neuroradiology*, Winter School of Human Brain Project, Obergurgl (Austria) (28 November 2016 - 04 December 2016)
- Sept 2016 *FSL-Based Hybrid Atlas Promotes Activation Weighted Vector Analysis in Functional Neuroradiology*, INCF Conference, Reading (UK) (03-04 September 2016)
- Jan 2016 *Computational Intelligence Applications to Functional Neuroimaging*, 3rd Human Brain Project Workshop, Manchester (UK) (11-15 January 2016)

Extra Information

General programming skills

- Primary Python, Matlab, R
- Secondary HTML/CSS/Javascript, SQL, Java, C/C++

Languages Certifications

- 2017-2019 IELTS, Academic, Overall Band Score: 6.0; CEFR Level: B2
- 2015-2017 IELTS, Academic, Overall Band Score: 5.0; CEFR Level: B2

Other activities

- 2016-2018 Computer Science PhD Student ambassador, University of Insubria, Varese-Como, IT
- 2018 Conference staff at SIAM Conference on Applied Mathematics, Bologna, IT

Extended academic biography

- 2020 - 2021 From April 2020 to September 2021, Alberto Arturo Vergani is working as postdoctoral researcher in computational neuroscience on modelling visual computation principles at NeOpto Team (lead by Frédéric Chavane) Institute de Neuroscience de la Timone (INT), Aix Marseille University, France.

This project is funded by the French National Research Agency (ANR) under the ANR Horizontal V1 grant (coordinator Y. Frégnac) which aims at understanding the emergence of sensory predictions linking local shape attributes (orientation, contour) to global indices of movement (direction, speed, trajectory) at the earliest stage of cortical processing (primary visual cortex, i.e. V1).

The cross-talk between physiological and theoretical approaches is fostered by the close collaboration with the teams of Frédéric Chavane at INT and Yves Frégnac at UNIC. The theoretical work is performed in close collaboration with Lyle Muller (Western U) and Jan Antolik (Prague). This project is primarily hosted at the Institut de Neurosciences de la Timone and the Vergani's research advisor is Laurent Perrinet.

- 2019 - 2020 From January 2019 to March 2020, Vergani was a postdoctoral researcher in neuromorphic computing at Middlesex University in London. He works in the NEAL project (Neuromorphic Agents that Learn), headed by Prof. Chris Huyck, that is part of the Human Brain Project (SP9 Neuromorphic Subproject).
- The main tasks were to develop agents for virtual environments implemented in simulated and emulated spiking neurons. In particular, he was working on designing full agents (e.g., cell assembly bot (CABOT)), cognitive components (e.g., associative memories, cognitive maps, rule-based systems, planners, parsers, language generators), and cognitive patterns (e.g., neural finite state machine and timer). He is also exploring the thermodynamics of stationary attractor by using Hopfield neuronal network.
- The systems were developed in the Python Neural Net middleware (PyNN), with the simulated backend in NEST, whereas emulated neurons use sPyNNaker and BrainScaleS neuromorphic hardware. The project made use of both the HBP neurorobotics platform and HBP neuromorphic platform.
- 2015 - 2018 During the triennial period in between October 2015 and December 2018, Alberto Vergani achieved the PhD in Computer Science and Computational Mathematics (XXXI cycle) as ESR at CRAIIM, Centre for Research in Image Analysis and Medical Informatics, headed by Prof.ssa Elisabetta Binaghi, at University of Insubria, Department of Theoretical and Applied Science, Varese, Italy, in collaboration with the Medical Physics Unit, the Neurosurgery Unit and the Functional Neuroradiology Unit, at Hospital of Varese (Circolo e Fondazione Macchi).
- His PhD research concerned: i) the design of a new hybrid brain functional atlas; ii) the applications of computational intelligence methodologies in the context of functional neuroimaging, i.e., fMRI, where he formalized a new soft clustering evaluation index; iii) conceptualized the crossed clustering framework (namely, the χ (chi) clustering) for spatio-temporal data; iv) the solution of the clustering problem as an ill-posed problem through the adoption of numerical techniques.
- 2015 Before starting the PhD, Vergani attended several PRACE courses on high performance computing and courses on the relations between brain, mind and computer science offered by the Human Brain Project (HBP) and by the International Neuroinformatics Coordinating Facility (INCF). Moreover, being interested in approaching the brain as a complex system, during the spring of 2015 Vergani attended biophysics courses organized by the International Centre of Theoretical Physics (ICTP) in Trieste, Italy.
- 2011 - 2014 From September 2007 to December 2014, Alberto Vergani graduated (MSc) in Cognitive Science at University of Milan with Prof.ssa Folgieri and Prof. Gianfranco Prini writing a thesis on both the analysis of the electrophysiologic signals recorded by the brain-computer-interfaces and on the history of computing (e.g., from Pascal, Leibniz and Babbage machines to high performance computing and neuromorphic hardwares)

2007 - 2011 From September 2011 to March 2011, Vergani graduated (BSc) in Psychology (Neuroscience curriculum) at the Nuclear Medicine Unit of Vita-Salute San Raffaele University in Milan with Dr.ssa Perani, working on a thesis about the neuro-cognitive reserve hypothesis in neurology.

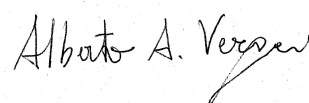
Publications

- C. R. Huyck and A. A. **Vergani**, "Hot coffee: associative memory with bump attractor cell assemblies of spiking neurons," *Journal of Computational Neuroscience*, vol. 48, no. 3, pp. 299–316, 2020.
- A. A. **Vergani**, "Counting temporal classes in a resting-state fmri exam," *ResearchGate preprint*, 2020.
- A. A. **Vergani** and C. R. Huyck, "Critical limits in a bump attractor network of spiking neurons," *arXiv preprint arXiv:2003.13365*, 2020.
- S. Martinelli, A. A. **Vergani**, and E. Binaghi, "Comparison of validity indexes for fuzzy clusters of fmri data," *Lecture Notes in Computational Vision and Biomechanics*, vol. 34, pp. 169–178, 2019.
- G. Gonella, E. Binaghi, A. A. **Vergani**, I. Biotti, and L. Levrini, "A cloud fuzzy logic framework for oral disease risk assessment," *Lecture Notes in Computer Science*, vol. 11291, pp. 85–96, 2019.
- A. A. **Vergani**, S. Martinelli, and E. Binaghi, "Resting state fmri analysis using unsupervised learning algorithms," *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, pp. 1–14, 2019.
- A. A. **Vergani**, E. Binaghi, S. Martinelli, and S. Strocchi, "Resting state fmri functional connectivity analysis using soft competitive learning algorithms," in *15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization*, pp. 1–12, 2018.
- A. A. **Vergani**, "Solving clustering as ill-posed problem: Experiments with k-means algorithm," *ResearchGate preprint*, vol. -, 2018.
- A. A. **Vergani**, S. Martinelli, and E. Binaghi, "Clustering functional mri patterns with fuzzy and competitive algorithms," *Lecture Notes in Computer Science*, vol. 10986, pp. 129–144, 2019.
- E. Binaghi, A. A. **Vergani**, A. Montalbetti, R. Minotto, V. Pedoia, S. Strocchi, and S. Balbi, "Computation and management of weighted activation vectors in support to fmri analysis of clinical subjects," *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, pp. 1–20, 2018.
- A. A. **Vergani** and E. Binaghi, "A soft davies-bouldin separation measure," in *2018 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)*, pp. 1–8, IEEE, 2018.
- A. A. **Vergani**, R. Minotto, S. Strocchi, and E. Binaghi, "Quantitative relations between craiim human brain atlases," in *1st Human Brain Project Student Conference*, pp. 60–68, Frontiers Media (SA), 2018.
- A. A. **Vergani**, S. Martinelli, and E. Binaghi, "Cluster analysis of functional neuroimages using data reduction and competitive learning algorithms," *Lecture Notes in Computational Vision and Biomechanics*, vol. 27, pp. 62–71, 2017.
- E. Binaghi, A. A. **Vergani**, and V. Pedoia, "Accuracy evaluation of soft classifiers using interval type-2 fuzzy sets framework," in *2017 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)*, pp. 1–6, IEEE, 2017.

A. A. **Vergani**, R. Minotto, S. Strocchi, and E. Binaghi, "Fsl-based hybrid atlas promotes activation weighted vector analysis in functional neuroradiology," *Frontiers in Neuroinformatics*, vol. 77, 2016.

Marseille, July 8, 2021

Alberto A. Vergani

A handwritten signature in black ink that reads "Alberto A. Vergani". The signature is written in a cursive style with a prominent flourish at the end of the last name.