



## SCHEDA PER LA RACCOLTA DEL CURRICULUM SCIENTIFICO

Corso di Laurea: Processi Cognitivi e Tecnologie

Insegnamento/i: Psicotecnologie e Processi Formativi 2

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Cognome: Breda

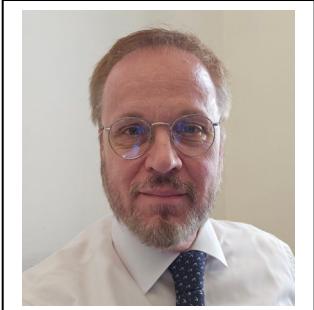
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Il **curriculum scientifico** deve contenere solo le informazioni del Docente/Tutor relative ai titoli conseguiti, alle sue produzioni e pubblicazioni scientifiche, all'attività didattica svolta e all'esperienza professionale posseduta.

Il **curriculum scientifico** non può contenere informazioni come: l'indirizzo di residenza, il codice fiscale, lo stato civile o altre informazioni familiari, il numero di telefono, gli indirizzi email e pec personali, le coordinate bancarie, la scansione della firma, o altri dati non pertinenti rispetto all'Offerta Formativa.

Il **curriculum vitae** redatto secondo il formato europeo o per la candidatura a concorsi o assunzioni non è conforme e **NON potrà essere pubblicato**.



### **Curriculum scientifico (in italiano)**

Marco Breda è attualmente il Responsabile del Laboratorio di Ateneo sull'Intelligenza Artificiale dell'Università Telematica Internazionale UNINETTUNO; Università dove è anche Docente-tutor del corso Psicotecnologie e Processi Formativi 2 e docente video nel corso Reti neurali. Fino all'inizio del 2024 ha ricoperto il ruolo di Direttore dell'Area Advanced Analytics & AI presso il Data & Analytics Center of Excellence di Engineering Ingegneria Informatica, dove ha curato la progettazione e lo sviluppo di sistemi analitici complessi per aziende industriali pubbliche e private in diversi settori ICT utilizzando paradigmi di machine learning.

Prima di entrare a far parte di Engineering nel 2009, dal 1998 ha lavorato come project manager specializzato in Data Warehousing, Business Intelligence e Data Mining per diverse aziende IT. In precedenza, a partire dal 1991, ha lavorato nella Divisione Ricerca di Ericsson Telecomunicazioni, occupandosi di Reti a Banda Larga e Sistemi Complessi. Dal 1990 ha collaborato anche con TIM progettando reti private avanzate per grandi utenti.

Parallelamente alla sua carriera professionale, dal 1997, è Ricercatore Associato presso il Centro di Ricerca Semeion, occupandosi principalmente di ricerca di base nell'ambito del Machine Learning e dell'Intelligenza Artificiale, risultando all'attivo di una trentina di pubblicazioni. Dal 2010 al 2024 è stato docente presso la Scuola "Enrico della Valle", dove ha



tenuto corsi di Data Warehousing e Advanced Analytics. Ha conseguito la laurea M.Sc, summa cum laude, in Ingegneria Elettronica presso l'Università "Sapienza" di Roma nel 1989

**Publications**

- Buscema, P. M., Massini, G., Raimondi, G., Caporaso, G., Breda, M., & Petritoli, R. (2023). A Pattern Recognition Analysis of Vessel Trajectories. *Algorithms*, 16(9), 414.
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### Curriculum scientifico (in inglese)

Marco Breda is currently the Head of the University Laboratory on Artificial Intelligence of the International Telematic University UNINETTUNO; University where he is also a professor-tutor of the course Psychotechnologies and Training Processes 2 and a video professor in the course Neural networks. Until the beginning of 2024, he held the position of Director of the Advanced Analytics & AI Area at the Data & Analytics Center of Excellence of Engineering Ingegneria Informatica, where he oversaw the design and development of complex analytical systems for public and private industrial companies in different ICT sectors using machine learning paradigms.

Before joining Engineering in 2009, he worked as a project manager specializing in Data Warehousing, Business Intelligence and Data Mining for various IT companies since 1998. Previously, starting in 1991, he worked in the Research Division of Ericsson Telecommunications, dealing with Broadband Networks and Complex Systems. Since 1990 he has also collaborated with TIM designing advanced private networks for large users.

In parallel with his professional career, since 1997, he has been an Associate Researcher at the Semeion Research Center, mainly dealing with basic research in the field of Machine Learning and Artificial Intelligence, resulting in about thirty publications. From 2010 to 2024 he was a lecturer at the "Enrico della Valle" School, where he taught courses in Data Warehousing and Advanced Analytics. He received his M.Sc degree, summa laude, in Electronic Engineering from the "Sapienza" University of Rome in 1989.

#### Publications

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### Curriculum scientifico (in francese)

Marco Breda est actuellement chef du Laboratoire universitaire sur l'intelligence artificielle de l'Université télématique internationale UNINETTUNO ; Université, où il est également professeur-tuteur du cours Psychotechnologies et processus de formation 2 et professeur de vidéo dans le cours Réseaux de neurones. Jusqu'au début de l'année 2024, il occupait le poste de directeur du domaine de l'analytique avancée et de l'IA au Centre d'excellence des données et de l'analyse d'Ingegneria Informatica, où il a supervisé la conception et le développement de systèmes analytiques complexes pour des entreprises industrielles publiques et privées de différents secteurs des TIC en utilisant des paradigmes d'apprentissage automatique.

Avant de rejoindre Engineering en 2009, il a travaillé en tant que chef de projet spécialisé dans l'entreposage de données, l'intelligence d'affaires et l'exploration de données pour diverses entreprises informatiques depuis 1998. Auparavant, à partir de 1991, il a travaillé dans la division de recherche d'Ericsson Telecommunications, où il s'occupait des réseaux à large bande et des systèmes complexes. Depuis 1990, il collabore également avec TIM en concevant des réseaux privés avancés pour les grands utilisateurs.

Parallèlement à sa carrière professionnelle, il est depuis 1997 Chercheur Associé au Centre de Recherche Semeion, s'occupant principalement de la recherche fondamentale dans le domaine de l'Apprentissage Machine et de l'Intelligence Artificielle, donnant lieu à une trentaine de publications. De 2010 à 2024, il a été chargé de cours à l'école « Enrico della Valle », où il a donné des cours sur l'entreposage de données et l'analyse avancée. Il a obtenu son M.Sc diplôme, summa laude, en ingénierie électronique à l'Université « Sapienza » de Rome en 1989.

### Publications

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- Buscema, P. M., Massini, G., Fabrizi, M., Breda, M., & Della Torre, F. (2018). The ANNS approach to DEM reconstruction. *Computational Intelligence*, 34(1), 310-344.
- Buscema, M., Consonni, V., Ballabio, D., Mauri, A., Massini, G., Breda, M., & Todeschini, R. (2014). K-CM: A new artificial neural network. Application to supervised pattern recognition. *Chemometrics and Intelligent Laboratory Systems*, 138, 110-119.
- Buscema, M., Vernieri, F., Massini, G., Scrascia, F., Breda, M., Rossini, P. M., & Grossi, E. (2015). An improved I-FAST system for the diagnosis of Alzheimer's disease from unprocessed electroencephalograms by using robust invariant features. *Artificial intelligence in medicine*, 64(1), 59-74.
- Buscema, M., Asadi-Zeydabadi, M., Lodwick, W., & Breda, M. (2016). The H0 function, a new index for detecting structural/topological complexity information in undirected graphs. *Physica A: Statistical Mechanics and its Applications*, 447, 355-378.
- Buscema, M., Sacco, P. L., Ferilli, G., Breda, M., & Grossi, E. (2014). Analyzing the Semantics of Point Spaces through the Topological Weighted Centroid and Other Mathematical Quantities: The Hidden Geometry of the Global Economic Order. *Computational Intelligence*, 31(3), 532-567. doi:10.1111/coin.12040
- Buscema, M., Breda, M., & Lodwick, W. (2013). Training With Input Selection and Testing (TWIST) algorithm: a significant advance in pattern recognition performance of machine learning. *Journal of Intelligent Learning Systems and Applications*, 5(1), 29.
- Buscema, M., Ballabio, D., Consonni, V., Massini, G., Breda, M., Fabrizi, M., ... & Todeschini, R. (2013). K-contractive map (k-cm) for classification. In *VIII Colloquium Chemometricum Mediterraneum*.
- Buscema, M., Mancini, A., & Breda, M. (2013). Preprocessing Tools for Nonlinear Datasets. In *Intelligent Data Mining in Law Enforcement Analytics* (pp. 137-155). Springer, Dordrecht.
- Buscema, M., Breda, M., Grossi, E., Catzola, L., & Sacco, P. L. (2013). Semantics of point spaces through the Topological Weighted Centroid and other mathematical quantities: Theory and applications. In *Data Mining Applications Using Artificial Adaptive Systems* (pp. 75-139). Springer, New York, NY.
- Buscema, M., Breda, M., Grossi, E., Catzola, L., & Sacco, P. L. (2012). Semantics of Point Spaces through the Topological Weighted Centroid and Other Mathematical Quantities—Theory & Applications. Springer: New York, NY, USA.
- Buscema, M., Breda, M., & Catzola, G. (2009). The topological weighted centroid, and the semantic of the physical space—Theory. *Artificial adaptive systems in medicine*, 69-78.
- Buscema, M., Grossi, E., Breda, M., & Jefferson, T. (2009). Outbreaks source: A new mathematical approach to identify their possible location. *Physica A: Statistical Mechanics and its Applications*, 388(22), 4736-4762.
- Buscema, M., Breda, M., & Terzi, S. (2006, January). New Recurrent Neural Architectures. In *Proceedings of the 2006 WSEAS International Conference on Mathematical Biology and Ecology*, Miami, Florida, USA (pp. 174-201).



- Buscema, M., Breda, M., & Terzi, S. (2006, March). A feed forward sine based neural network for functional approximation of a waste incinerator emissions. In Proceedings of the 8th WSEAS international conference on automatic control, modeling and simulation, Prague.
- Buscema, P. M. E., Bottigli, U., Grossi, E., Breda, M., Catzola, L. (2006). Sistemi ACM e Imaging Diagnostico: le immagini mediche come Matrici Attive di Connessioni. Springer Science & Business Media.
- Buscema, M., Catzola, L., & Breda, M. (2006). Sistemi ACM a connessioni fisse. In Sistemi ACM e Imaging Diagnostico (pp. 21-35). Springer, Milano.
- Buscema, M., Terzi, S., & Breda, M. (2006). Using sinusoidal modulated weights improve feed-forward neural network performances in classification and functional approximation problems.. WSEAS Transactions on information science and applications, 3(5), 885-893.
- Buscema, M., Grossi, E., Intraligi, M., Garbagna, N., Andriulli, A., & Breda, M. (2005). An optimized experimental protocol based on neuro-evolutionary algorithms: application to the classification of dyspeptic patients and to the prediction of the effectiveness of their treatment. Artificial Intelligence in Medicine, 34(3), 279-305.
- Buscema, M., Breda, M., & Terzi, S. (2002). Complex recurrent networks: a new type of micro artificial organism. Technical Paper, (27).
- Buscema, M., Breda, M. (1999). Aspetti sulla convergenza di Reti Neurali Back-propagation. In Buscema, M., & Semeion Group. Reti neurali artificiali e sistemi sociali complessi: teoria, modelli, applicazioni. Angeli.
- Buscema, M., Breda, M. (1999). Reti Neurali Ricorrenti. In Buscema, M., & Semeion Group. Reti neurali artificiali e sistemi sociali complessi: teoria, modelli, applicazioni. Angeli.
- Buscema, M., Breda, M, & Terzi, S. (1999). Reti Neurali Autoriflessive. In Buscema, M., & Semeion Group. Reti neurali artificiali e sistemi sociali complessi: teoria, modelli, applicazioni. Angeli.
- Buscema, M., Breda, M. (1999). Self Organizing Maps. In Buscema, M., & Semeion Group. Reti neurali artificiali e sistemi sociali complessi: teoria, modelli, applicazioni. Angeli.
- Buscema, M. E., Breda M. (1998). Convergence aspects on Back-propagation Neural Networks. In Artificial neural networks and complex social systems. I. Theory. Substance Use & Misuse, 33(1), v-xvii.

Ai sensi del D. L.gvo del 30 giugno 2003, n. 196 (Codice in materia di protezione dei dati personali), informato delle finalità del trattamento dei dati e della loro registrazione su supporti informatici, nonché dei soggetti responsabili dello stesso,

AUTORIZZO

con la trasmissione di questa scheda, UNINETTUNO Università Telematica nella figura del Rettore prof. Maria Amata Garito al trattamento dei dati personali contenuti in questo modulo per esclusive finalità didattiche e di ricerca al fine di consentire lo svolgimento dell'insegnamento e delle pratiche amministrative collegate.