

DAVIDE VALERIANI

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London, UK

davidevaleriani

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EXPERIENCE

Technogym

Technical Leader Data Science

May 2024 - Ongoing

London, UK

- Leading a team of data scientists to develop AI solutions to enhance wellness and fitness.

WHOOOP

Data Science Technical Lead

August 2023 - April 2024

Boston, MA, USA

- Leading a team of 3 data scientists to develop machine-learning algorithms to analyze sleep from accelerometer and PPG data.
- Establishing roadmaps and setting priorities with cross-functional stakeholders from product, software and engineering.

Google

Senior Research Scientist

October 2022 - July 2023

Cambridge, MA, USA

- Developed machine learning algorithm to assess cardiovascular health from wearable sensors.
- Published 2 abstracts to AHA and BSN international conferences.

Neurable

Lead Data Scientist

February 2021 - October 2022

Boston, MA, USA

- Developed signal processing and machine learning algorithms to estimate focus from EEG signals.
- Managed and mentored a team of 5 engineers and scientists.

Harvard Medical School

Postdoctoral Research Fellow

September 2018 - February 2021

Boston, MA, USA

- Developed a deep learning algorithm for diagnosing dystonia from brain MRI data with 99% accuracy.
- Researched neural representations of speech production using dynamic causal modeling and fMRI data.

Senior Research Officer

University of Essex

February 2017 - August 2018

Colchester, UK

- Developed brain-computer interfaces to augment performance of human-AI teams in face recognition.
- Trained international collaborators in collecting brain data with high-density EEG with 256 channels.

EDUCATION

Ph.D. in Computing and Electronic Systems

University of Essex

Oct 2013 - July 2017

Thesis: *Improving group decision making with collaborative brain-computer interfaces*

M.Sc. in Computer Engineering

University of Parma

Oct 2010 - Mar 2013

B.Sc. in Computer Engineering

University of Parma

Oct 2007 - Dec 2010

TECHNICAL SKILLS

Data Science



Pandas, seaborn, matplotlib, numpy, scipy

Machine Learning



Classification, regression, statistical analysis, MLOps, scikit-learn, MLflow

Deep Learning



Tensorflow, PyTorch, keras, convolutional neural network

Large Language Model



Transformer, LangChain, HuggingFace, GPT, prompt engineering

Software Engineering



Test-driven development, object-oriented programming, Git, SVN, Docker, API

Programming



Python, Matlab, R, C++, Java, Javascript, HTML

People Management



Mentorship, supervision, performance evaluation, career development

Project Management



Agile, Scrum, planning, prioritization

Research



Grant and paper writing, experimental design, data collection, communication, neuroscience (EEG/fMRI)

LANGUAGES

English



Italian



Spanish



French



PUBLICATIONS

Journal Articles

- A. K. Singh, L. Bianchi, **D. Valeriani**, and M. Nakanishi, “Advances and challenges to bridge computational intelligence and neuroscience for brain-computer interface,” *Frontiers in Neuroergonomics*, vol. 5, p. 1461494,
- **D. Valeriani**, H. Cecotti, A. Thelen, and C. Herff, “Editorial: Translational brain-computer interfaces: From research labs to the market and back,” *Frontiers in Human Neuroscience*, vol. 17, Feb. 2023.
- B. ' Hart, T. Achakulvisut, A. Adeyemi, *et al.*, “Neuromatch academy: A 3-week, online summer school in computational neuroscience,” *Journal of Open Source Education*, vol. 5, p. 118, 49 Mar. 2022.
- J. E. Huggins, D. Krusienski, M. J. Vansteensel, *et al.*, “Workshops of the eighth international brain-computer interface meeting: BCIs: The next frontier,” *Brain-Computer Interfaces*, vol. 9, pp. 69–101, 2 Apr. 2022.
- C. Salvatore, **D. Valeriani**, V. Piccialli, and L. Bianchi, “Optimized collaborative brain-computer interfaces for enhancing face recognition,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 30, pp. 1223–1232, 2022.
- K. Simonyan, S. K. Ehrlich, R. Andersen, *et al.*, “Brain-computer interfaces for treatment of focal dystonia,” *Movement Disorders*, vol. 37, pp. 1798–1802, 9 Sep. 2022.
- **D. Valeriani**, L. C. O’Flynn, A. Worthley, A. H. Sichani, and K. Simonyan, “Multimodal collaborative brain-computer interfaces aid human-machine team decision-making in a pandemic scenario,” *Journal of Neural Engineering*, vol. 19, p. 056036, 5 Oct. 2022.
- **D. Valeriani**, F. Santoro, and M. Ienca, “The present and future of neural interfaces,” *Frontiers in Neurorobotics*, vol. 16, Oct. 2022.
- A. Antonietti, P. Balachandran, A. Hossaini, Y. Hu, and **D. Valeriani**, “The BCI glossary: A first proposal for a community review,” *Brain-Computer Interfaces*, vol. 8, pp. 42–53, 3 Jul. 2021.
- S. Bhattacharyya, **D. Valeriani**, C. Cinel, L. Citi, and R. Poli, “Anytime collaborative brain-computer interfaces for enhancing perceptual group decision-making,” *Scientific Reports*, vol. 11, p. 17008, 1 Aug. 2021.
- I. Daly, A. Matran-Fernandez, **D. Valeriani**, M. Lebedev, and A. Kübler, “Editorial: Datasets for brain-computer interface applications,” *Frontiers in Neuroscience*, vol. 15, Sep. 2021.
- C. Easttom, L. Bianchi, **D. Valeriani**, *et al.*, “A functional BCI model by the p2731 working group: Control interface,” *Brain-Computer Interfaces*, vol. 8, pp. 154–160, 4 Oct. 2021.
- C. Easttom, L. Bianchi, **D. Valeriani**, *et al.*, “A functional model for unifying brain computer interface terminology,” *IEEE Open Journal of Engineering in Medicine and Biology*, vol. 2, pp. 91–96, 2021.
- J. Fernandez-Vargas, C. Tremmel, **D. Valeriani**, *et al.*, “Subject- and task-independent neural correlates and prediction of decision confidence in perceptual decision making,” *Journal of Neural Engineering*, vol. 18, p. 046055, 4 Aug. 2021.
- A. Hossaini, **D. Valeriani**, C. S. Nam, R. Ferrante, and M. Mahmud, “A functional BCI model by the p2731 working group: Physiology,” *Brain-Computer Interfaces*, vol. 8, pp. 54–81, 3 Jul. 2021.
- **D. Valeriani**, H. Ayaz, N. Kosmyna, R. Poli, and P. Maes, “Editorial: Neurotechnologies for human augmentation,” *Frontiers in Neuroscience*, vol. 15, Nov. 2021.

CERTIFICATIONS

Generative AI with Large Language Models

Coursera, 2023

ChatGPT Prompt Engineering for Developers

DeepLearning.AI, 2023

Specialized Models: Time Series and Survival Analysis

Coursera, 2023

Deploying Machine Learning Models in Production

Coursera, 2021

Machine Learning Engineering for Production (MLOps) Specialization

Coursera, 2021

Introduction to Machine Learning in Production

Coursera, 2021

Machine Learning Data Lifecycle in Production

Coursera, 2021

Machine Learning Modeling Pipelines in Production

Coursera, 2021

Certificate in Systems Design

Cornell University, 2021

Biomedical / Clinical Research Investigators

Coursera, 2018

Machine Learning

Coursera, 2014

Associate Fellow

UK Higher Education Academy, 2014

HTML5 Game Development

Coursera, 2013

Introduction to Computer Science

Coursera, 2012

Programming a Robotic Car

Coursera, 2012

Introduction to Artificial Intelligence















Coursera, 2011

- **D. Valeriani** and K. Simonyan, “The dynamic connectome of speech control,” *Philosophical Transactions of the Royal Society B: Biological Sciences*, vol. 376, 1836 Oct. 2021.
- T. van Viegen, A. Akrami, K. Bonnen, *et al.*, “Neuromatch academy: Teaching computational neuroscience with global accessibility,” *Trends in Cognitive Sciences*, vol. 25, pp. 535–538, 7 Jul. 2021.
- N. Z. Bielczyk, A. Ando, A. Badhwar, *et al.*, “Effective self-management for early career researchers in the natural and life sciences,” *Neuron*, vol. 106, pp. 212–217, 2 Apr. 2020.
- **D. Valeriani** and K. Simonyan, “A microstructural neural network biomarker for dystonia diagnosis identified by a dystonianet deep learning platform,” *Proceedings of the National Academy of Sciences*, vol. 117, pp. 26 398–26 405, 42 Oct. 2020.
- C. Cinel, **D. Valeriani**, and R. Poli, “Neurotechnologies for human cognitive augmentation: Current state of the art and future prospects,” *Frontiers in Human Neuroscience*, vol. 13, January 2019.
- **D. Valeriani**, C. Cinel, and R. Poli, “Brain–computer interfaces for human augmentation,” *Brain Sciences*, vol. 9, p. 22, 2 Jan. 2019.
- **D. Valeriani** and R. Poli, “Cyborg groups enhance face recognition in crowded environments,” *PLOS ONE*, vol. 14, F. Schwenker, Ed., e0212935, 3 Mar. 2019.
- **D. Valeriani**, C. Cinel, and R. Poli, “Group augmentation in realistic visual-search decisions via a hybrid brain-computer interface,” *Scientific Reports*, vol. 7, p. 7772, 1 Aug. 2017.
- **D. Valeriani**, R. Poli, and C. Cinel, “Enhancement of group perception via a collaborative brain–computer interface,” *IEEE Transactions on Biomedical Engineering*, vol. 64, pp. 1238–1248, 6 Jun. 2017.
- M. Cigolini, A. Costalunga, F. Parisi, *et al.*, “Lessons learned in a ball fetch-and-carry robotic competition,” *Journal of Automation, Mobile Robotics & Intelligent Systems*, vol. 8, pp. 82–90, 1 2014.
- R. Poli, **D. Valeriani**, and C. Cinel, “Collaborative brain-computer interface for aiding decision-making,” *PLoS ONE*, vol. 9, M. J. Chacron, Ed., e102693, 7 Jul. 2014.

Conference Proceedings

- J. Fernandez-Vargas, **D. Valeriani**, C. Cinel, *et al.*, “Confidence prediction from EEG recordings in a multisensory environment,” ACM, Sep. 2020, pp. 269–275.
- S. Bhattacharyya, **D. Valeriani**, C. Cinel, L. Citi, and R. Poli, “Collaborative brain-computer interfaces to enhance group decisions in an outpost surveillance task,” IEEE, Jul. 2019, pp. 3099–3102, ISBN: 978-1-5386-1311-5.
- S. Bhattacharyya, **D. Valeriani**, C. Cinel, L. Citi, and R. Poli, “Target detection in video feeds with selected dyads and groups assisted by collaborative brain-computer interfaces,” vol. 2019-March, IEEE, Mar. 2019, pp. 159–162, ISBN: 978-1-5386-7921-0.
- **D. Valeriani**, S. Bhattacharyya, C. Cinel, L. Citi, and R. Poli, “Augmenting group decision making accuracy in a realistic environment using collaborative brain-computer interfaces based on error-related potentials,” 2018.
- **D. Valeriani**, C. Cinel, and R. Poli, “A collaborative BCI trained to aid group decisions in a visual search task works well with similar tasks,” 2017.
- **D. Valeriani**, C. Cinel, and R. Poli, “Augmenting group performance in target-face recognition via collaborative brain-computer interfaces for surveillance applications,” IEEE, May 2017, pp. 415–418, ISBN: 978-1-5090-4603-4.

AWARDS

-  **Best Poster Award**
IEEE Body Sensor Network Conference, 2023
-  **Study UK Alumni Award: Innovation**
British Council, 2022
-  **Student Award**
BCI Society, 2021
-  **Best Poster Award: Non-Invasive BCI**
BCI Society, 2021
-  **Best Abstract Award: Non-Invasive BCI**
2nd Annual Computational Data Neuroscience Symposium, 2020
-  **Radcliffe Exploratory Seminar Award**
Radcliffe Institute at Harvard University, 2020
-  **NetSci Fellowship**
Network Science Conference, 2020
-  **OHBM People’s Choice Abstract Award**
Organization for Human Brain Mapping, 2019
-  **Host-a-Scholar Award**
Harvard Brain Science Initiative, 2019
-  **Bronze Medal**
Cybathlon BCI Race, 2016
-  **Best Paper Award**
7th IEEE EMBS Neural Engineering Conference, 2015
-  **London Science Museum Award**
HackTheBrain UK, 2015
-  **Best Paper Award**
4th International Conference on Robotics in Education, 2015
-  **Winner**
Sick Robot Day, 2012

- **D. Valeriani**, C. Cinel, and R. Poli, “Hybrid collaborative brain-computer interfaces to augment group decision making,” 2016.
- **D. Valeriani**, C. Cinel, and R. Poli, “Improving speech perception with collaborative brain-computer interfaces,” 2016.
- **D. Valeriani** and A. Matran-Fernandez, “Towards a wearable device for controlling a smartphone with eye winks,” 2015, pp. 41–46, ISBN: 9781467394819.
- **D. Valeriani**, A. Matran-Fernandez, D. Perez-Liebana, J. Asensio-Cubero, C. O’Connell, and A. Iacob, “A comparison of ensemble methods for motor imagery brain-computer interfaces,” 2015.
- **D. Valeriani**, R. Poli, and C. Cinel, “A collaborative brain-computer interface for improving group detection of visual targets in complex natural environments,” IEEE, Apr. 2015, pp. 25–28, ISBN: 978-1-4673-6389-1.
- **D. Valeriani**, R. Poli, and C. Cinel, “A collaborative brain-computer interface to improve human performance in a visual search task,” IEEE, Apr. 2015, pp. 218–223, ISBN: 978-1-4673-6389-1.
- M. Cigolini, A. Costalunga, F. Parisi, *et al.*, “Lessons learned in a ball fetch-and-carry robotic competition,” 2013.
- P. Mesejo, S. Cagnoni, A. Costalunga, and **D. Valeriani**, “Segmentation of histological images using a metaheuristic-based level set approach,” ACM, Jul. 2013, pp. 1455–1462, ISBN: 9781450319645.
- **D. Valeriani**, D. L. Rizzini, F. Oleari, and S. Caselli, “A viewpoint planning and navigation algorithm for mobile robots using depth images,” 2013.

Book Chapters

- A. Molnar, D. Stanley, and **D. Valeriani**, “Neurotechnology, stakeholders, and neuroethics: Real decisions and trade-offs from an insider’s perspective,” in V. Dubljević and A. Coin, Eds. Springer, 2023, pp. 271–283.
- S. Bhattacharyya, C. Cinel, L. Citi, **D. Valeriani**, and R. Poli, “Walking improves the performance of a brain-computer interface for group decision making,” in S. H. Fairclough and T. O. Zander, Eds. Elsevier, 2022, pp. 221–233.
- **D. Valeriani**, C. Cinel, and R. Poli, “Hybrid collaborative brain-computer interfaces to augment group decision making,” in H. Ayaz and F. Dehais, Eds. Elsevier, 2018.
- **D. Valeriani** and A. Matran-Fernandez, “Past and future of multi-mind brain-computer interfaces,” in C. S. Nam, A. Nijholt, and F. Lotte, Eds. CRC Press, Jan. 2018, pp. 685–700.
- A. Matran-Fernandez, **D. Valeriani**, and R. Poli, “Toward BCIs out of the lab: Impact of motion artifacts on brain-computer interface performance,” in P. Salvo and M. Hernandez-Silveira, Eds. CRC Press, Feb. 2016, pp. 219–240, ISBN: 978-1-4987-0076-4.


Patents

- K. Simonyan and **D. Valeriani**, *Objective evaluation of neurological movement disorders from medical imaging*, International Patent Application No. PCT/US2020/053571.

LEADERSHIP


Board Member

BCI Society

 2022 – Ongoing


Associate Editor

Brain Computer Interfaces journal

 2022 – Ongoing

Associate Editor

Frontiers in Neuroergonomics journal

 2020 – Ongoing

Young Talent Committee Chair

International BCI Meeting

 2022 – 2023

Student and Postdoc Committee Chair

BCI Society

 2020 – 2022

Board Member

Harvard Medical Postdoctoral Association

 2019 – 2021

Observers Track Chair

Neuromatch Academy

 2020 – 2020

Co-Founder and Director

EyeWink Ltd.

 2015 – 2020

Programme Committee Chair

7th Computer Science and Electronic Engineering Conference

 2015 – 2015