

# Alessandro Vato

## *Curriculum Vitae*

### Current Position

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#### **Research Scientist**

National Center for Adaptive Neurotechnologies (NCAN)  
Albany Research Institute  
Stratton VA Medical Center  
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<https://www.neurotechcenter.org/people/ncan-staff/alessandro-vato-phd>

### Research Interests

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- **Neural Engineering:** bidirectional brain-machine interfaces, neural information processing, neural coding and decoding algorithms, sensory motor integration, artificial sensory feedback.
- **System & Cognitive Neuroscience:** neural oscillations, intracranial EEG signals analysis (ECoG & sEEG), adaptive neuromodulation, neuroplasticity.

### Higher Education and Training

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Postdoctoral Fellow	Physiology Northwestern University, Chicago (USA)	2006-2008
Postdoctoral Fellow	Neural Engineering University of Genova (Italy)	2004-2005
Ph.D.	Bioengineering and Bioelectronics University of Genova (Italy) <i>Connecting neurons to artificial devices: a new tool for investigating the neural code</i>	2004
Graduate degree (Laurea)	Electronic and Biomedical Engineering 5-years, M. Eng. equivalent University of Genova (Italy) <i>System for the management and processing of neuronal electrophysiological signals</i>	2000

## Research Positions

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Research Associate	Department of Neuroscience and Experimental Therapeutics Albany Medical College - Albany, New York (US)	2019-2020
Research Scientist	Istituto Italiano di Tecnologia – IIT, Genova, Italy	2017-2020
Researcher	Neural Computation Lab Center for Neuroscience and Cognitive Systems Istituto Italiano di Tecnologia - IIT, Rovereto (Italy)	2014-2017
Team Leader	Brain Machine Interface Lab Robotics, Brain & Cognitive Sciences Department Istituto Italiano di Tecnologia – IIT, Genova (Italy)	2008-2014

## Teaching Experiences

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Teaching Professor	<i>Neuroelectronic devices and Brain Machine interfaces</i> Biomedical Engineering Curriculum, University of Genova	2009-2012
Teaching Professor	<i>Interfacing with the nervous system</i> Doctoral School on “Life and Humanoid Technologies” University of Genova – IIT	2012
Teaching Professor	<i>In vivo brain-machine interfaces</i> Doctoral School on “Life and Humanoid Technologies” University of Genova – IIT	2010-2011
Teaching Assistant	<i>Electronic Bioengineering</i> Medical School Curriculum, University of Genova	2002-2004
Teaching Assistant	<i>Biomedical Instrumentation</i> Biomedical Engineering Curriculum, University of Genova	2002-2003

## Courses and Training

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Visiting Scientist at the Wadsworth Center of the New York State Department of Health (hosted by Prof. Gerwin Schalk and Dr. Antony Ritaccio), Albany, NY, USA	2015
Berlin Brain Computer Interface Workshop on Advances in Neurotechnology, Berlin University of Technology, Berlin, Germany	2009
Visiting Scholar at the Department of Physiology, Northwestern University (hosted by Prof. F.A. Mussa-Ivaldi) Chicago, IL, USA	2004
23 <sup>rd</sup> International Summer School of “Brain Research on Development, Dynamics and Pathology of Neuronal Networks: from Molecules to Functional Circuits”, Amsterdam, Netherlands	2003
First European School on Neuroengineering “Massimo Grattarola”, Venice, Italy	2003

XXI Bioengineering Annual School “Bioengineering of Biological Tissues”, Bressanone, Italy	2002
Neuroengineering Workshop & advanced School (NE.W.S.), Magazzini dell’Abbondanza, Genova, Italy	2001-2002
International IEEE EMBS Summer School 2001 on Biocomplexity, Bioscaling and Biosignal Interpretation, Dartmouth College, Hanover, NH, USA	2001

### Invited Talk

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University of Genova, Bio4Dreams and Istituto Italiano di Tecnologia, workshop on “Ethics and technological development in life science”, Genova (Italy)	Nov. 2019
Department of Neuroscience and Experimental Therapeutics (DNET) Seminars, “New perspectives on adaptive neuromodulation for the development of treatments for neurological disorders”, Albany Medical College, Albany (NY,USA)	Jan. 2017
Center for Devices and Radiological Health, U.S. Food and Drug Administration, “New perspective on the dialogue between brains and machines”, Silver Spring (MD, USA)	Dec. 2016
11th Bernstein Sparks Workshop, “Naturalistic integration of information from external stimulation into the ongoing neuronal activities of the brain”, Delmenhorst (Germany)	Oct. 2016
XI Workshop “Disease, Pain and Local Network”, Niguarda Hospital, Milan (Italy)	Mar. 2016
First Level Master, “Medical Home Health care”, University of Milan, Milan, (Italy)	May 2015
TEDx Trento – The man and the machines: the new frontiers of Neuroengineering, Trento (Italy)	Nov. 2014
CiNet Neurotechnology Talk Series, University of Osaka, Osaka (Japan)	Oct. 2014
International Workshop “New Frontiers in Neurotechnology”, Naples (Italy)	Sept. 2014
First Level Master, “Medical Home Health care”, University of Milan, Milan (Italy)	May 2013
8 bit Revolution Day, Politecnico di Torino, Turin (Italy)	May 2013
The International Symposium on Cognitive Neuroscience Robotics Paul G. Allen Center for CSE, University of Washington, Seattle, (WA, USA)	Feb. 2013
6 <sup>th</sup> European Summer School of Neuroengineering “Massimo Grattarola”, University of Genova, Genova (Italy)	June 2012

## Research Grants

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### Ongoing Research Support

Title: Spinal Effects of Cortical Stimulation: Mechanisms and Functional Impact  
Agency: National Institute of Neurological Disorders and Stroke (NINDS)  
Period: 09/30/2019 – 07/31/2024  
Role: Principal Investigator

Title: National Center for Adaptive Neurotechnologies  
Agency: National Institute of Biomedical Imaging and Bioengineering (NIBIB)  
Period: 09/10/2014 – 06/30/2024  
Role: Co-Investigator – Project Leader

Title: Dynamics and Causal Functions of Large-Scale Cortical and Subcortical Networks  
Agency: National Institute of Neurological Disorders and Stroke (NINDS)  
Period: 09/30/2018 – 08/31/2020  
Role: Co-Investigator

Title: EEG-based Control of a Robotic arm  
Agency: European Union and the Italian Ministry of Education, University and Research – MIUR  
Period: 12/22/2014 – 12/21/2020  
Role: Co-Investigator

Title: BCI2000+: A Software Platform for Adaptive Neurotechnologies:  
Agency: National Institute of Neurological Disorders and Stroke (NINDS)  
Period: 07/15/2018 – 06/30/2022  
Role: Co-Investigator

### Completed Research Support

Title: Development of an implantable wireless neural recording system  
Agency: European Union and the Italian Ministry of Education, University and Research – MIUR  
Period: 2015 - 2016  
Role: Principal Investigator

Title: Towards new Brain-Machine Interfaces: State dependent information coding- SICode  
Agency: European Union - ICT-2011.9.1 - EU FP7 FET  
Period: 2012 - 2014  
Role: Co-Investigator, WP-leader

## Publications

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### Journal Articles

1. De Feo, V., Boi, F., Safaai, H., Onken, A., Panzeri, S., and **Vato, A.** (2017) State-dependent decoding algorithms improve the performance of a bidirectional BMI in anesthetized rats. *Frontiers in Neuroscience*, 11, 269.
2. Boi, F., Moratis, T., De Feo, V., Diotalevi, F., Bartolozzi, C., Indiveri, G., and **Vato, A.** (2016) A bidirectional brain-machine interface featuring a neuromorphic hardware decoder. *Frontiers in Neuroscience*, 10,563.
3. Panzeri, S., Safaai, H., De Feo, V., and **Vato, A.** (2016) Implications of the dependence of neuronal activity on neural network states for the design of brain-machine interfaces. *Frontiers in Neuroscience*, 10, 165.
4. Angotzi G.N., Baranauskas G., **Vato A.**, Bonfanti A., Zambra G., Maggiolini E., Semprini M., Ricci D., Ansaldo A, Castagnola E., Ius T., Skrap M. and Fadiga L. (2015) A Compact and Autoclavable System for Acute Extracellular Neural Recording and Brain Pressure Monitoring for Humans. *IEEE Transactions on Biomedical Circuits and Systems* 9(1), 50-59.
5. Angotzi G.N., Boi F., Zordan S., Bonfanti A. and **Vato A.** (2014) A programmable closed-loop recording and stimulating wireless system for behaving small laboratory animals. *Scientific Reports* 4, 5963.
6. **Vato A.**, Szymanski F.D., Semprini M., Mussa-Ivaldi F.A. and Panzeri S. (2014). A bidirectional brain-machine interface algorithm that approximates arbitrary force-fields. *PLoS One* 9(3), e91677.
7. **Vato A.**, Semprini M., Maggiolini E., Szymanski F.D., Fadiga L., Panzeri S. and Mussa-Ivaldi F.A. (2012). Shaping the dynamics of a bidirectional neural interface. *PLoS Computational Biology* 8(7), e1002578.
8. Bonfanti A., Ceravolo M., Zambra G., Gusmeroli R., Baranauskas G., Angotzi G.N., **Vato A.**, Maggiolini E., Semprini M., Spinelli A.S. and Lacaita A.L. (2012). A Multi-Channel Low-Power System-on-Chip for in Vivo Recording and Wireless Transmission of Neural Spikes. *Journal of Low Power Electronics and Applications* 2(4), 211–241.
9. Baranauskas G., Maggiolini E., **Vato A.**, Angotzi G., Bonfanti A., Zambra G., Spinelli A. and Fadiga L. (2012). Origins of  $1/f^2$  scaling in the power spectrum of intracortical local field potential. *Journal of Neurophysiology* 107(3), 984-994.
10. Baranauskas G., Maggiolini E., Castagnola E., Ansaldo A., Mazzoni A., Angotzi G.N., **Vato A.**, Ricci D., Panzeri S. and Fadiga, L. (2011). Carbon nanotube composite coating of neural microelectrodes preferentially improves the multiunit signal-to-noise ratio. *Journal of Neural Engineering* 8(6), 066013.
11. Bonfanti A., Zambra G., Baranauskas G., Angotzi G.N., Maggiolini E., Semprini M., **Vato A.**, Fadiga L., Spinelli A.S. and Lacaita, A.L. (2011). A wireless microsystem with digital data compression for neural spike recording. *Microelectronic Engineering* 88(8), 1672-1675.
12. Mussa-Ivaldi F.A., Alford S.T., Chiappalone M., Fadiga L., Karniel A., Kositsky M., Maggiolini E., Panzeri S., Sanguineti V., Semprini M. and **Vato A.** (2010). New perspectives on the dialogue between brains and machines. *Frontiers in Neuroscience* 4(1), 44-52.

13. Chiappalone M., **Vato A.**, Berdondini L., Koudelka-Hep M. and Martinoia S. (2007). Network dynamics and synchronous activity in cultured cortical neurons. *International Journal of Neural Systems* 17(2), 87-103.
14. Chiappalone M., Bove M., **Vato A.**, Tedesco M. and Martinoia, S. (2006). Dissociated cortical networks show spontaneously correlated activity patterns during in vitro development. *Brain Research* 1093(1), 41-53.
15. Chiappalone M., Novellino A., Vajda I., **Vato A.**, Martinoia S. and Van Pelt, J. (2005). Burst detection algorithms for the analysis of spatio-temporal patterns in cortical networks of neurons. *Neurocomputing* 65-66, 653-662.
16. Stillo G., Bonzano L., Chiappalone M., **Vato A.**, Davide F.A. and Martinoia S., (2004). Burst on Hurst algorithm for detecting activity patterns in networks of cortical neurons. *International Journal of Information Technology* 1(4), 135-138.
17. **Vato A.**, Bonzano L., Chiappalone M., Cicero S., Morabito F., Novellino A. and Stillo G. (2004). Spike manager: A new tool for spontaneous and evoked neuronal networks activity characterization. *Neurocomputing* 58-60, 1153-1161.
18. Novellino A., Chiappalone M., **Vato A.**, Bove M., Tedesco M.B. and Martinoia, S. (2003). Behaviors from an electrically stimulated spinal cord neuronal network cultured on microelectrode arrays. *Neurocomputing* 52-54, 661-669.
19. Chiappalone M., **Vato A.**, Tedesco M., Marcoli M., Davide F. and Martinoia S. (2003). Networks of neurons coupled to microelectrode arrays: A neuronal sensory system for pharmacological applications. *Biosensors and Bioelectronics* 18(5), 627-634.

### **Book and Book Chapters**

- **Vato A.** (2015) Arrivano i cyborg. Dove neuroscienze e bioingegneria si incontrano (The cyborgs are coming: neuroscience and bioengineering meet), Italian language, Hoepli Press, p.144
- Semprini M., Boi F. and **Vato A.** (2016) Bidirectional Brain-Machine Interfaces. In: *Closed Loop Neuroscience*, edited by El Hady, Academic Press, San Diego, pp. 201-212.
- Bonzano L., **Vato A.**, Chiappalone M. and Martinoia S. (2007) Modulation of electrophysiological activity in neural networks: towards a bioartificial living system. In: *Handbook of Neural Engineering*, edited by Martin Akay, Wiley/IEEE Press, pp. 29-40.
- Martinoia S., Chiappalone M. and **Vato A.** (2004) Bioartificial neuronal networks: coupling networks of biological neuron to microtransducer arrays. In: *Smart adaptive system on silicon*, edited by Valle M., Boston: Kluwer Academic Publisher, pp. 285-302.

### **Dissertations**

- **Vato A.** (2004) Connecting neurons to artificial devices: a new tool for investigating the neural code, PhD thesis, University of Genova, (Italy).
- **Vato A.** (2000) System for the management and processing of neuronal electrophysiological signals, M.Eng. thesis, University of Genova, (Italy).

**Peer-Reviewed Proceedings**

1. Boi F., Semprini M., **Vato A.** (2016) A Non-Linear Mapping Algorithm Shaping the Control Policy of a Bidirectional Brain Machine Interface, *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2016*, Orlando (FL, USA).
2. Semprini M., Boi F., Tucci V., **Vato A.** (2016) A Study on the Effect of Multisensory Stimulation in Behaving Rats, *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2016*, Orlando (FL, USA).
3. Boi F., Semprini M., Mussa Ivaldi F.A., Panzeri S. and **Vato A.** (2015) A bidirectional brain-machine interface connecting alert rodents to a dynamical system, *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2015*, pp. 51-54, Milan (Italy).
4. Boi F., Diotalevi F., Stefanini F., Indiveri G., Bartolozzi C. and **Vato A.** (2015) A modular configurable system for closed-loop bidirectional brain-machine interfaces, *International IEEE EMBS Conference on Neural Engineering, NER 2015*, pp. 198-201, Montpellier (France).
5. Angotzi G.N., Boi F., Zordan S. and **Vato A.** (2013). A compact wireless multi-channel system for real-time intracortical microstimulation of behaving rodents, *International IEEE/EMBS Conference on Neural Engineering, NER 2013*, pp. 1009-1012, San Diego, (CA, USA).
6. Semprini M., Bennicelli L. and **Vato A.** (2012) A parametric study of intracortical microstimulation in behaving rats for the development of artificial sensory channels, *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2012*, pp. 799-802, San Diego, (CA, USA).
7. Szymanski F.D., Semprini M., Mussa-Ivaldi F. A., Fadiga L., Panzeri S. and **Vato A.** (2011). Dynamic brain-machine interface: A novel paradigm for bidirectional interaction between brains and dynamical systems, *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2011*, pp. 4592-4595, Boston, (MA, USA).
8. **Vato A.**, Bonzano L., Chiappalone M., Novellino A., Tedesco M.B., Bove M. and Martinoia S. (2003) Modulating neural networks dynamics: multi-site electrical stimulation of in-vitro cortical neurons coupled to MEA devices, *1<sup>st</sup> International IEEE/EMBS Conference on Neural Engineering, NER 2003*, pp. 466-489, Capri Island (Italy).
9. Grattarola M., Chiappalone M., Davide F., Martinoia S., Tedesco M.B., Rosso N. and **Vato A.** (2001) Burst analysis of chemically stimulated spinal cord neuronal networks cultured on microelectrode arrays. *Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2001*, pp. 792-732, Istanbul (Turkey).

**Abstracts**

1. Wang Y., Herron B., Chen Y., Chen X.Y., Carp J.S., **Vato A.**, Fake T., Wolpaw J. (2021) Electro-cortical stimulation increases Gad1 transcription of ventral spinal cord GABAergic interneurons but does not change Gabbr1 expression of soleus motoneuron, *Society for Neuroscience, Global Connectome*.
2. Carp J.S., Wang Y., Chen Y., Chen X.Y., Herron B., **Vato A.**, Wolpaw J. (2021) H-reflex up- versus down-conditioning effects on NMDA receptor 1, protein kinase C, and potassium-chloride cotransporter activation in soleus motoneurons of spinal cord-injured rats, *Society for Neuroscience, Global Connectome*.

3. **Vato A.**, Li G., S. Jiang S., Zhang D., Chen L., Raviv N., Schalk G. (2019) Passive functional mapping of eloquent cortex using stereo-electroencephalography (SEEG), *Society for Neuroscience*, Chicago, (IL, USA).
4. **Vato A.**, Schalk G. (2017) Amplitude Bias in Low-Frequency Oscillatory Activity: Experimental Evidence and Implications, *Society for Neuroscience*, Washington, (DC, USA).
5. Semprini M., Boi F., Mussa Ivaldi F. A., Panzeri S. and **Vato A.** (2015) Experimental paradigm for exploring the dynamical properties of a bidirectional brain-machine interface based on force fields, *Society for Neuroscience*, Chicago, (IL, USA).
6. **Vato A.**, Szymanski F.D., Semprini M., Mussa-Ivaldi F.A. and Panzeri S. (2012) A bidirectional BMI algorithm based on decoding artificial sensory information that reach the motor cortex, *Research in Encoding and Decoding of Neural Ensembles*, Santorini, (Greece).
7. Semprini M., Szymanski F.D., Grussu F., Mussa-Ivaldi F.A., Panzeri S. and **Vato A.** (2012) Algorithms for shaping the dynamics of a bidirectional neural interface, *22<sup>nd</sup> Annual Conference of the Society for the Neural Control of Movement*, Venice, (Italy).
8. Maggiolini E., Ansaldo A., Castagnola E., Mazzoni A., Angotzi G., Semprini M., **Vato A.**, Bonfanti A., Zambra G., Spinelli A., Panzeri S., Ricci D. and Fadiga L. (2012) Ppy-CNTs coating increases the sensitivity of extracellular neuronal recordings in vivo, *Society for Neuroscience*, New Orleans, (LA, USA).
9. Castagnola E., Ansaldo A., Maggiolini E., **Vato A.**, Fadiga L. and Ricci D. (2011) Electrochemical and electrophysiological performance of carbon nanotube based coatings on neural probes, *220<sup>th</sup> ECS Meeting and Electrochemical Energy Summit*, Boston, (MA, USA).
10. Maggiolini E., Castagnola E., Ansaldo A., **Vato A.**, Fadiga L. and Ricci D. (2011) Carbon nanotubes coatings: a new strategy to improve the quality of chronic neuro-implants over time?, *European Materials Research Society Spring Meeting*, Nice, (France).
11. Semprini M., Maggiolini E., Panzeri S., Mussa-Ivaldi F.A., Fadiga L. and **Vato A.** (2010) A Parametric Study of Information Transfer between Stimulating and Recording Electrodes in a Closed Loop Brain Machine Interface, *Research in Encoding and Decoding of Neural Ensembles*, Santorini, (Greece).
12. Semprini M., Szymanski F., Maggiolini E., Mussa-Ivaldi F.A., Fadiga L., Panzeri S. and **Vato A.** (2010) A study of how to optimally transfer information between stimulating and recording electrodes in a closed loop brain machine interface, *Society for Neuroscience*, San Diego, (CA, USA).
13. **Vato A.**, Semprini M., Maggiolini E., Fadiga L., Panzeri S. and Mussa-Ivaldi F.A. (2010) Dynamic shaping: A new paradigm for bidirectional brain-machine interfaces, *Society for Neuroscience*, San Diego, (CA, USA).
14. Semprini M., Szymanski F., Maggiolini E., Mussa-Ivaldi F.A., Fadiga L., Panzeri S. and **Vato A.** (2010) A study of how to optimally transfer information between stimulating and recording electrodes in a closed loop brain machine interface, *Society for Neuroscience*, San Diego, USA, San Diego, (CA, USA).
15. Castagnola E., Ansaldo A., Maggiolini E., Baranauskas G., **Vato A.**, Panzeri S., Fadiga L. and Ricci D. (2010) Microelectrode for brain machine interface applications: can carbon nanotubes provide an ideal solution?, *Society for Neuroscience*, San Diego, (CA, USA).



16. Bonfanti A., Zambra G., Baranauskas G., Angotzi G. N., Maggiolini E., Semprini M., **Vato A.**, Spinelli S. and Lacaita A.L. (2010) A Wireless Microsystem With Digital Data Compression For Neural Signal Recording, *36<sup>th</sup> International Conference on Micro and Nano Engineering (MNE2010)*, Genova, (Italy).
17. Baranauskas G., Bonfanti A., Zambra G., Angotzi G.N., Maggiolini E., Semprini M., **Vato A.** and Spinelli A.S. (2010) The design of high quality compact integrated multichannel systems for multi-unit recording from small laboratory animals, *Society for Neuroscience*, Chicago, (IL, USA).
18. Bonfanti A., Zambra G., Borghi T., Spinelli A.S., Angotzi G.N., Baranauskas G., Maggiolini E., Semprini M., **Vato A.** (2009) Oliynyk A., Torazza D., Budai R., Skrap M., Tomasino B. and Fadiga L., A compact 8-channel system for multi-unit recordings with an autoclavable headstage developed for human brain tumor boundary detection, *Society for Neuroscience*, Chicago, (IL, USA).
19. Semprini M., Maggiolini E., Bennicelli L. and **Vato A.** (2009) A parametric study of intracortical microstimulation of the somatosensory cortex in behaving rodents, *Society for Neuroscience*, Chicago, (IL, USA).
20. Semprini M., Maggiolini E., Panzeri S., Mussa-Ivaldi F.A., Fadiga L. and **Vato A.** (2010) A Parametric Study of Information Transfer between Stimulating and Recording Electrodes in a Closed Loop Brain Machine Interface, *Research in Encoding and Decoding of Neural Ensembles*, Santorini (Greece).
21. **Vato A.** and Mussa-Ivaldi F.A. (2007) Cortical stimulation for artificial proprioception: A preliminary study in behaving rats, *Society for Neuroscience*, San Diego, (CA, USA).
22. **Vato A.** and Mussa-Ivaldi F.A. (2006) Training rodents to manipulate, *Society for Neuroscience*, Atlanta, (GA, USA).
23. Martinoia S., Chiappalone M., Massobrio P., Tedesco M. and **Vato A.** (2006) Plastic changes in cortical networks coupled to Micro Electrode Arrays, *5<sup>th</sup> Forum of European Neuroscience*, Wien (Austria).
24. Kositsky M., Chiappalone M., **Vato A.**, Rebesch J., Alford S.T. and Mussa-Ivaldi F.A. (2005) Training Brain Machine Interface systems by controlled plasticity. *Society for Neuroscience*, Washington (DC, USA).
25. Martinoia S., **Vato A.**, Chiappalone M., Tedesco M., Berdondini L. and Koudelka-Hep M. (2005) Clustered Microelectrode Arrays promote selective activity patterns in networks of cortical neurons. *Society for Neuroscience*, Washington (DC, USA).
26. **Vato A.**, Berdondini L., Koudelka-Hep M., Chiappalone M., Tedesco M. and Martinoia S. (2005) Spontaneous and evoked activity in cortical neuronal networks coupled to cluster microelectrode arrays, *National Congress of the Italian Society of Neuroscience and Joint Italian-Swedish Neuroscience Meeting*, Ischia, Naples, (Italy).
27. Chiappalone M., Novellino A., Massobrio P., Tedesco M., **Vato A.** and Martinoia S. (2005) A bi-directional neuro-robotic interface: adaptive properties and distributed synaptic changes in in-vitro neocortical cultures, *National Congress of the Italian Society of Neuroscience and Joint Italian-Swedish Neuroscience Meeting*, Ischia, Naples, (Italy).
28. Kositsky M., Chiappalone M., **Vato A.**, Rebesch J.M., Alford S.T. and Mussa-Ivaldi F.A. (2005) Employing neural potentiation mechanisms within brain-machine interface system, *Computational Neuroscience Meeting – CNS 2005*, Madison, (WI, USA).

29. Chiappalone M., Bove M., **Vato A.**, Tedesco M. and Martinoia S. (2004) Modulation of rhythmic activity in networks of cortical neurons during development, *4<sup>th</sup> International Meeting on Substrate- Integrated Microelectrode Arrays – SIMEA 2004*, Reutlingen (Germany).
30. Chiappalone M., Novellino A., **Vato A.**, Martinoia S., Vajda I. and van Pelt J. (2004) Analysis of the bursting behavior in developing neural networks, *2<sup>nd</sup> International Symposium on Measurement, Analysis and Modeling of Human Functions*, Genova (Italy).
31. Martinoia S., Chiappalone M., **Vato A.** and Bove M. (2003) Analysis of activity patterns induced by electrical stimulation of cortical networks cultured on Microelectrode Arrays, *3<sup>rd</sup> International Conference on Substrate-Integrated Microelectrodes – SIMEA 2003*, Denton (TX, USA).
32. **Vato A.**, Bonzano L., Chiappalone M., Novellino A., Tedesco M., Bove M. and Martinoia S. (2003) Modulating Neural Networks Dynamics: Multi-Site Electrical Stimulation of In-Vitro Cortical Neurons Coupled to MEA Devices, *1<sup>st</sup> International IEEE EMBS Conf. on Neural Engineering*, Capri (Italy).
33. Verreschi G., Novellino A., **Vato A.** and Martinoia S. (2003) Software tools for data analysis and acquisition from multichannel system based on microelectrode arrays for electrophysiological measurements, *8<sup>th</sup> national conference on sensors and microsystems*, Trento (Italy).
34. Novellino A., Chiappalone M., **Vato A.**, Bove M., Martinoia S. and Grattarola M. (2002) Electrical stimulation can induce changes in dynamics of a spinal cord neuronal network cultured on microelectrode arrays, *11<sup>th</sup> Annual Computational Neuroscience Meeting – CNS 2002*, Chicago (IL, USA).
35. **Vato A.**, Chiappalone M., Novellino A., Bove M., Martinoia S. and Grattarola M. (2002) Analysis of electrically stimulated spinal cord neuronal networks cultured on microelectrode arrays, *4<sup>th</sup> International Workshop on Biosignal Interpretation*, Como (Italy), 2002.
36. Grattarola M., Chiappalone M., Davide F., Tedesco M., Rosso N. and **Vato A.** (2001) Burst analysis of chemically stimulated spinal cord neuronal networks cultured on microelectrode arrays, *23<sup>rd</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Istanbul (Turkey), 2001.
37. Chiappalone M., Grattarola M., Pisciotta M., Tedesco M.T., **Vato A.** and Davide F.A. (2001) Neuroengineering: Bioartificial Networks of real neurons. *Electroactive Polymers and Biosystems: New Directions in Electroactive Polymer Materials for Biomimetic and Interactive Processes*, Il Ciocco, Lucca, (Italy).

## Languages

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English (fluent), Italian (native).

## Citizenship

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Italian and Green Card Holder

## Mentorship

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Vito DeFeo, Post-doctoral Fellow, Istituto Italiano di Tecnologia, 2015-2016

Marianna Semprini, Post-doctoral Fellow, Istituto Italiano di Tecnologia, 2011-2014

Matteo Falappa, undergraduate student, University of Genova, 2014-2015

Ilaria Cosentini, undergraduate student, University of Genova, 2014-2015

Stefano Zordan, undergraduate student, University of Genova, 2013-2014

Francesco Grussu, undergraduate student, University of Genova, 2011-2012  
Fabio Boi, PhD Student, University of Genova, 2012- 2015  
Marianna Semprini, PhD Student, University of Genova, 2007-2011

January 1<sup>st</sup>, 2021