

Curriculum vitae of Stefano Ramat

Full professor in bioengineering

Ph.D. in biomedical engineering

MsC Master in computer science engineering

Education

2000-2002 Post doctoral research fellow, Department of Neurology, The Johns Hopkins University School of Medicine

1998 Overcomes the national examination to the profession of Computer Science Engineer.

1997-2000 Ph.D. student in Biomedical engineering at the Polytechnic of Milan with a final dissertation entitled "The saccadic mechanism sub-serving gaze control"

1995 Graduation in computer science engineering (MSc, 5 years laurea) at the University of Pavia presenting an experimental thesis entitled "Functional interpretation of the vestibular nystagmus and study of the habituation processes of the VOR".

Professional experience

2020 – Full professor of Bioengineering, University of Pavia

2017 – Obtains the National Scientific Licence (Abilitazione Scientifica Nazionale) to full professor of bioengineering

2015 – Director of the public company Parco Tecnico Scientifico di Pavia s.c.a.r.l.

2011-2015 Board member of the public company Polo Tecnologico Servizi S.r.l.

2010 December. Appointed Director of the Center for Interdisciplinary Research on Motor and Sport Activities (CRIAMS) of the University of Pavia

2007 July. Invited professor, Faculté des Sciences du Sport, Université de la Méditerranée, Marseille – Aix II, Marseille, France

2006- 2020 Associate professor of Bioengineering, University of Pavia

2003-2006 FIRB Researcher at the Department of Computer and Systems science, University of Pavia,

2003- Professor for the class of "Biomimetic systems", School of Engineering, University of Pavia

2002-2003 Research associate, Department of Neurology, The Johns Hopkins University School of Medicine

1999- Professor for the class of "Electronic and Computer Science Engineering", School of Medicine, University of Pavia

1998-2000 Contract professor for the class of "Fundamental informatics", School of Medicine of the University of Pavia

06/1998 – 9/1998 Research stage at the Ocular motor laboratory of the Veterans Administration Hospital di Cleveland, OH, USA under the supervision of prof. R. J. Leigh.

1996 works for 15 months for the software company Univers Informatique, Paris, France

Known languages

Italian: mother tongue

English: oral and writing, over four years spent in the United States of America.

French: oral and writing, over two years spent in France.

Research interests

Neuroscience

Computational neuroscience

Mathematical modeling

Neural control of movement

Sensorimotor systems

Ocular motor control

Soft computing techniques in biomedical signal processing

Research projects

2013-2016 PRIN 2010R277FT A quantitative multifactorial approach to the assessment and prevention of falls in the elderly – Research unit responsible.

2005-2006 INTERREG III C 2E0006R, Linear accelerations and otolith-induced postural responses/LOTO – Research unit responsible

2003-2006 FIRB RBNE01FJ4J “Human movement and sensorimotor integration: redundancy, plasticity, learning, spatial memory, degradation, models”. Co-investigator

NASA/NSBRI NCC 9-58 “Context-specificity and other approaches to neurovestibular adaptation”, Co-investigator

NIH R01 DC05040, “Evaluation of Vestibular Function in Meniere's disease”. Co-investigator

NIH R01 DC02849, “Adaptation of Linear and Angular Vestibuloocular Reflexes”. Co-investigator

1997-2000 EU ADAPT project "Quantitative study of human-computer interaction in remote tutoring systems". Co-investigator

International Collaborations

Prof. David. S. Zee, Dept. of Neurology, The Johns Hopkins School of Medicine, Baltimore, MD, USA.

Prof. Dominik Straumann, Dept. of Neurology, Zurich University Hospital, Zurich, Switzerland

Prof. R. John Leigh, Dept. of Neurology, Case Western Research University, Cleveland, OH

Prof. Erich Schneider, Integrated Center for Research and Treatment of Vertigo, Balance and Ocular Motor, Ludwig-Maximilian-University of Munich, Germany

Memberships: the Bárány society, the Society for Neuroscience, the IEEE, EMBS

Referee activity:

He is a referee for the *Journal of Neurophysiology*, *Experimental Brain Research*, *Journal of Vestibular Research*, *Annals of the New York Academy of Sciences*, *IEEE Transactions on Biomedical Engineering*, *IEEE Transactions on Information Technology in Biomedicine*, *Vision Research*, *Frontiers in Neuroscience*.

He is a member of the editorial board for *Frontiers in Neurology*.

He was a reviewer for the EU in the FP6 program and in ERC 2013.

Recent Invited seminars:

03/2019 Neurotology Opinions, *fHIT: the functional head impulse test*, Milano, Italy

06/2018 Barany Society Satellite Symposium, *A test for vestibular migraine: preliminary results*. Sandhamn, Sweden

10/2017 Fourth meeting of the European Vertigo and Balance Network, *The functional head impulse test*, Sonnenhausen, München, Germany

06/2016 Barany Society Satellite Symposium, *Covert saccades in head impulse testing* Muui Island, Seoul, South Korea

10/2015 Second meeting of the European Vertigo and Balance Network, *Multiple time scales and multiple learning sites in the adaptation of the VOR: implications for rehabilitation?* Sonnenhausen, München, Germany

05/2014 Graduate School of Systemic Neurosciences (GSN-LMU), **Functional testing of the VOR: the HITD approach**, Biocenter Lüdwing Maximillian Universität, München, Germany

04/2014 Vestibular Processing in Motor Control, satellite meeting of the Neural Control of Movement Society annual meeting, *Multiple time scales and sensory prediction in the adaptation of the angular VOR*, Amsterdam, Nederland

11/2012 Fifth national conference on movement disorders, the Italian society of neurology. *The ocular motor exam and disorders*, Pisa, Italy

- 04/2011 Fifth national conference on movement disorders, the Italian society of neurology. *Membranes and circuits: the mechanism of saccadic oscillations*, Bologna, Italy
- 09/2010 European Federation of Neurological Societies. *Mechanisms of saccadic oscillations*, Genève, Switzerland
- 06/2010 Karolinska Institute - Fixational Eye Movements and Visual Stabilization 2010. *Saccades, models, membranes and patients: from the clinic to the lab and back*, Stockholm, Sweden.
- 05/2010 Collège de France – Sensorimotor computation: the control of gaze. *Saccades, models, membranes and patients: from behavior to the bench and back*. Paris, France.

Other recent teaching and educational activities

- 09/2016 Law, Cognitive Neuroscience & New Technologies Summer School 2016, European Center for Law, Science and new Technologies, University of Pavia *Brain Computer Interfaces*
- 05/2014 One day workshop, Graduate School of Systemic Neurosciences (GSN-LMU), München, Germany *Modeling the ocular motor control system*
- 06/2013 Master in neuro-ophthalmology University of Siena *Retina, optic nerve, eye movements and nystagmus*
- 05/2012 Master in neuro-ophthalmology University of Siena *Visual perception: eye movements and nystagmus*
- 06/2011 Master in neuro-ophthalmology University of Siena *The physiopathology of the VOR*

Patents

EP2398377 *Head impulse testing device for assessing the functionality of the semicircular canals and for the rehabilitation of vestibular loss*, Stefano Ramat and Marco Mandalà, 2009

Publications

International journals

1. R.J. Leigh, S. Ramat **Neuropharmacological aspects of the ocular motor system and the treatment of abnormal eye movements** Curr Opin Neurol, 12 (1),p. 21-27, 1999
2. S. Ramat, J. Somers, V.E. Das, R.J. Leigh **Conjugate ocular oscillations during shifts of the direction and depth of visual fixation**, Invest Opht and Vis Sci,40 (8), 1999.
3. S. Ramat, V. E. Das, J. T. Somers, R. J. Leigh **Tests of two hypotheses to account for different-sized saccades during disjunctive gaze shifts**, Exp Brain Res 129; 4, 500-510, 1999
4. R. Bhidayasiri, J.T. Somers, J.I. Kim, S. Ramat, S. Nayak, H.S. Bokil, R.J. Leigh **Ocular oscillations induced by shifts of the direction and depth of visual fixation**. Ann Neurol. 2001; 49(1):24-8.
5. S. Ramat, D.S. Zee, L.B. Minor **Translational vestibuloocular reflex evoked by a "Head heave" stimulus**, Ann N Y Acad Sci; 942:95-113, 2001
6. S. Ramat, R. Schmid, D. Zambarbieri **Oculomotor responses to active head movements in darkness: formulation and testing of a mathematical model**, Ann N Y Acad Sci; 942:482-5, 2001
7. D.M. Lasker, S. Ramat, J.P. Carey, L.B. Minor **Vergence-mediated modulation of the human horizontal angular VOR provides evidence of pathway-specific changes in VOR dynamics**, Ann N Y Acad Sci; 956:324-337, 2002
8. D.S. Zee, M.F. Walker, S. Ramat **The cerebellar contribution to eye movements based upon lesions: binocular, three-axis control and the translational vestibulo-ocular reflex**, Ann N Y Acad Sci; 956:178-189, 2002
9. S. Ramat, D.S. Zee **TVOR responses to abrupt interaural accelerations in normal humans**, Ann N Y Acad Sci; 956:551-4, 2002
10. A.N. Kumar, Y. Han, S. Ramat, R.J. Leigh **Anticipatory Saccadic-Vergence Responses in Humans**. Ann N Y Acad Sci; 956:495-498, 2002
11. G. Danese, F. Leporati, S. Ramat **A parallel neural processor for real-time applications**. IEEE Micro; 22(3): 20-32, 2002
12. M. Shalhamer, G.C.Y. Peng, S. Ramat, V. Patel **Context-specific adaptation of the gain of the oculomotor response to lateral translation using roll and pitch head tilts as contexts**. Exp Brain Res, 146:388-393, 2002
13. G. Magenes, S. Ramat, E.L. Secco, **Life-like Sensorimotor Control: from Biological Systems to Artifacts**, Current Psychology of Cognition, 21(4-5): 565-596, 2002
14. S. Ramat, D.S. Zee **Ocular motor responses to abrupt interaural head translation in normal humans**, J Neurophysiol, 90(2):887-902, 2003
15. S. Ramat, R. Schmid, D. Zambarbieri **Eye-head coordination in darkness: formulation and testing of a mathematical model**, J Vestib Res. 2003;13(2-3):79-91.
16. O. Bergamin, S. Ramat, D. Straumann, D.S. Zee **Influence of exiting wire of search coil annulus on torsion following saccades**, Invest Ophthalmol Vis Sci. 2004 Jan;45(1):131-7.

17. S. Ramat, R.J. Leigh, D.S. Zee, L.M. Optican **Ocular oscillations generated by coupling of brainstem excitatory and inhibitory saccadic burst neurons.** Exp Brain Res, 160: 89-106, 2005.
18. S. Ramat, D.S. Zee **Binocular coordination in fore/aft motion,** Ann N Y Acad Sci; 1039: 36-53, 2005
19. A. Buizza, S. Ramat **About the effects of velocity saturation on smooth pursuit.** Ann N Y Acad Sci; 1039:459-62., 2005
20. A.N. Kumar, Y.H. Han, K. Liao, J.C.Rucker, S. Ramat, R.J. Leigh **Evaluating large saccades in patients with brain-stem or cerebellar disorders.** Ann N Y Acad Sci.; 1039:404-16., 2005.
21. S. Ramat, D. Straumann, D.S. Zee **The interaural translational VOR: suppression, enhancement and cognitive control.** J Neurophysiol.;94(4):2391-402, 2005
22. S. Ramat, G. Magenes **Latency detection in motor responses: a model based approach with genetic algorithm optimization.** IEEE Trans Biomed Eng, 53(10):2015-2023, 2006
23. F. Karmali, S. Ramat, M.J. Shelhamer. **Vertical skew due to changes in gravito-inertial force: a possible consequence of otolith asymmetry.** J Vestib Res. 2006;16(3):117-25.
24. S. Ramat, R.J. Leigh, D.S. Zee, L.M. Optican. **What clinical disorders tell us about the neural control of saccadic eye movements.** Brain. 2007 Jan;130(Pt 1):10-35.
25. A.A. Tarnutzer, S. Ramat, D. Straumann, D.S. Zee. **Pursuit responses during ongoing tracking.** J Neurophysiol. 2007 Feb;97(2):1266-79.
26. A.G. Shaikh, K. Miura, L.M. Optican, S. Ramat, R.J. Leigh, D.S. Zee. **A new familial disease of saccadic oscillations and limb tremor provides clues to mechanisms of common tremor disorders.** Brain. 2007 Nov;130(Pt 11):3020-31.
27. D. Solomon, S. Ramat, R.L. Tomsak, S.G. Reich, R.K. Shin, D.S. Zee, R.J. Leigh **Saccadic palsy after cardiac surgery: characteristics and pathogenesis.** Ann Neurol. 2008 Mar;63(3):355-65.
28. A.G. Shaikh, H.A. Jinnah, R.M. Tripp, L.M. Optican, S. Ramat, F.A. Lenz, D.S. Zee **Irregularity distinguishes limb tremor in cervical dystonia from essential tremor.** J Neurol Neurosurg Psychiatry. 2008 Feb;79(2):187-9.
29. S. Ramat, R.J. Leigh, D.S. Zee, A.G. Shaikh, L.M. Optican. **Applying saccade models to account for oscillations.** Prog Brain Res. 2008;171:123-30.
30. G. Bertolini, C.J. Bockisch, D. Straumann, D.S. Zee, S. Ramat. **Do humans show velocity-storage in the vertical rVOR?** Prog Brain Res. 2008;171:207-10.
31. D. Solomon, S. Ramat, R.J. Leigh, D.S. Zee **A quick look at slow saccades after cardiac surgery: where is the lesion?** Prog Brain Res. 2008;171:587-90.
32. A.G. Shaikh, K. Miura, L.M. Optican, S. Ramat, R.M. Tripp, D.S. Zee **Hypothetical membrane mechanisms in essential tremor.** J Transl Med. 2008 Nov 6;6:68.
33. A.G. Shaikh, S. Ramat, L.M. Optican, K. Miura, R.J. Leigh, D.S. Zee. **Saccadic burst cell membrane dysfunction is responsible for saccadic oscillations,** J Neuro-Ophthalmol, 28(4): 329-336, 2008.

34. S. Ramat, G. Bertolini, **Estimating the Time Constants of the rVOR: A Model-Based Study.** *Ann N Y Acad Sci.*, 2009; 1039:140-146.
35. S. Colnaghi, S. Ramat, E. D'Angelo, M. Versino. **Transcranial magnetic stimulation over the cerebellum and eye movements: state of the art.** *Funct Neurol.* 2010 Jul-Sep;25(3):165-71
36. G. Bertolini, S. Ramat, J. Laurens, Bockish C.J., Marti S., Straumann D.S., Palla A. **Velocity storage contribution to vestibular self motion perception in healthy human subjects,** *J Neurophysiol.* 2011 Jan;105(1):209-23.
37. A.L. Chen, S. Ramat, A. Serra, S.A. King, R.J. Leigh **The role of the medial longitudinal fasciculus in horizontal gaze: tests of current hypotheses for saccade-vergence interactions,** *Exp Brain Res.* 2011 Feb;208(3):335-43.
38. G. Bertolini, S. Ramat, **Velocity storage in the human vertical rotational vestibulo-ocular reflex,** *Exp Brain Res.* 2011 Mar;209(1):51-63.
39. V. Colletti, M. Mandalà, P. Manganotti, S. Ramat, L. Sacchetto, L. Colletti **Intraoperative observation of changes in cochlear nerve action potentials during exposure to electromagnetic fields generated by mobile phones.** *J Neurol Neurosurg Psychiatry.* 2010 Dec 16.
40. S. Colnaghi, S. Ramat, E. D'Angelo, A. Cortese, G. Beltrami, A. Moglia, M. Versino. **Theta burst stimulation of the cerebellum interferes with internal representations of sensory-motor information related to eye movements in humans.** *Cerebellum.* 2011, Dec;10(4):711-9
41. A.G. Shaikh, D.S. Zee, L.M. Optican, K. Miura, S. Ramat, R.J. Leigh. **The effects of ion channel blockers validate the conductance-based model of saccadic oscillations.** *Ann N Y Acad Sci.* 2011 Sep;1233:58-63
42. S. Ramat, S. Colnaghi, A. Boehler, S. Astore, P. Falco, M. Mandalà, D. Nuti, P. Colagiorgio, M. Versino. **A Device for the Functional Evaluation of the VOR in Clinical Settings.** *Front Neurol.* 2012;3:39.
43. S. Ramat, A. Nesti, M. Versino, S. Colnaghi, C. Magnaghi, A. Bianchi, G. Beltrami **A new device to assess static ocular torsion.** *Ann N Y Acad Sci.* 2011 Sep;1233: 226-30.
44. G. Bertolini, S. Ramat, Bockish C.J., Marti S., Straumann D.S., Palla A. **Is vestibular self-motion perception controlled by the velocity storage? Insights from patients with chronic degeneration of the vestibulo-cerebellum.** *PLoS One.* 2012;7(6):e36763.
45. M. Mandalà, V. Colletti, L. Sacchetto, P. Manganotti, S. Ramat, A. Marcocci, L. Colletti. **Effect of Bluetooth headset and mobile phone electromagnetic fields on the human auditory nerve.** *Laryngoscope.* 2014 Jan; 124(1):255-9.
46. M. Versino, P. Colagiorgio, S. Sacco, S. Colnaghi, S. Ramat; **Artifact avoidance for head impulse testing.**; *Clin Neurophysiol.* 2014 May; 125(5):1071-3.
47. P. Colagiorgio, S. Colnaghi, M. Versino, S. Ramat; **A New Tool for Investigating the Functional Testing of the VOR.**; *Front Neurol.* 2013 Oct 25; 4:165.
48. A. Cristiani, G.M. Bertolotti, E. Marenzi, S. Ramat; **An Instrumented Insole for Long Term Monitoring Movement, Comfort, and Ergonomics;** *IEEE Sensors Journal.* May 2014; 14(5):1564-72.

49. Cusmano I, Sterpi I, Mazzone A, Ramat S, Delconte C, Pisano F, Colombo R. **Evaluation of upper limb sense of position in healthy individuals and patients after stroke.** *J Healthc Eng.* 2014;5(2):145-62. doi: 10.1260/2040-2295.5.2.145.
50. Ramaioli C, Colagiorgio P, Sağlam M, Heuser F, Schneider E, Ramat S., Lehenen N. **The Effect of Vestibulo-Ocular Reflex Deficits and Covert Saccades on Dynamic Vision in Opioid-Induced Vestibular Dysfunction.** *PLoS ONE* 2014; 9(10): e110322. doi:10.1371/journal.pone.0110322
51. Versino M, Colagiorgio P, Sacco S, Colnaghi S, Quagliari S, Manfrin M, Benazzo M, Moglia A, Ramat S.; **Reading while moving: the functional assessment of VOR.** *J Vestib Res.* 2014; 24(5-6):459-64. doi: 10.3233/VES-140531.
52. Colagiorgio P, Bertolini G, Bockish C.J., Straumann D.S., Ramat S, **Multiple timescales in the adaptation of the rotational VOR.** *J Neurophysiol.* 2015 May 1;113(9):3130-42. doi: 10.1152/jn.00688.2014
53. Soria C, Coccini T, De Simone U, Marchese L, Zorzoli I, Giorgetti S, Raimondi S, Mangione PP, Ramat S, Bellotti V, Manzo L, Stoppini M., **Enhanced toxicity of silver nanoparticles in transgenic Caenorhabditis elegans expressing amyloidogenic proteins.** *Amyloid.* 2015 Dec;22(4):221-8. doi: 10.3109/13506129.2015.1077216.
54. Bertolotti G.M., Cristiani A.M., Colagiorgio P., Romano F., Bassani E., Caramia, N., Ramat, S. **A Wearable and Modular Inertial Unit for Measuring Limb Movements and Balance Control Abilities,** *IEEE Sensors Journal*, 2016, 16 (3), 790 - 797, DOI: 10.1109/JSEN.2015.2489381
55. Romano F, Tarnutzer AA, Straumann D, Ramat S, Bertolini G. **Gaze-evoked nystagmus induced by alcohol intoxication.** *J Physiol.* 2017 Mar 15;595(6):2161-2173. doi: 10.1113/JP273204. Epub 2017 Jan 17. PubMed PMID: 27981586;
56. Colnaghi S, Colagiorgio P, Ramat S, D'Angelo E, Koch G, Versino M. **After Effects of Cerebellar Continuous Theta Burst Stimulation on Reflexive Saccades and Smooth Pursuit in Humans.** *Cerebellum.* 2017 Mar 16. doi: 10.1007/s12311-017-0852-y.
57. Colagiorgio P, Versino M, Colnaghi S, Quagliari S, Manfrin M, Zamaro E, Mantokoudis G, Zee DS, Ramat S. **New insights into vestibular-saccade interaction based on covert corrective saccades in patients with unilateral vestibular deficits.** *J Neurophysiol.* 2017 Apr 12;jn.00864.2016. doi: 10.1152/jn.00864.2016
58. Colnaghi S, Colagiorgio P, Versino M, Koch G, D'Angelo E, Ramat S. **A role for NMDAR-dependent cerebellar plasticity in adaptive control of saccades in humans,** *Brain Stimulation*, 2017, 10 (4): 817-827. doi: 10.1016/j.brs.2017.05.001.
59. Federighi P, Ramat S, Rosini F, Pretelegiani E, Federico A, Rufa A. **Characteristic Eye Movements in Ataxia-Telangiectasia-Like Disorder: An Explanatory Hypothesis,** *Front. Neurol.*, 2017, 8: 596. doi: 10.3389/fneur.2017.00596
60. Corallo G, Versino M, Mandalà M, Colnaghi S, Ramat S. **The functional head impulse test: preliminary data.** *J Neurol.* 2018 Jun 4. doi: 10.1007/s00415-018-8910-z
61. Colnaghi S, Colagiorgio P, Ramat S, Versino M. **Bilateral vestibular impairment in Vogt Koyanagi Harada syndrome: a case report.** *Neurol Sci.* 2018 Sep;39(9):1609-1611. doi: 10.1007/s10072-018-3410-6.

62. Ramaoli C, Cuturi LF, Ramat S, Lehnen N, MacNeilage PR. **Vestibulo-Ocular Responses and Dynamic Visual Acuity During Horizontal Rotation and Translation.** *Front Neurol.* 2019 Apr 9;10:321. doi: 10.3389/fneur.2019.00321
63. van Dooren TS, Lucieer FMP, Duijn S, Janssen AML, Guinand N, Pérez Fornos A, Van Rompaey V, Kingma H, Ramat S, van de Berg R, **The Functional Head Impulse Test to Assess Oscillopsia in Bilateral Vestibulopathy.** *Front Neurol.* 2019 Apr 16;10:365. doi: 10.3389/fneur.2019.00365
64. Romano F, Bertolini G, Agostino D, Straumann D, Ramat S, Feddermann-Demont N, **Functional Head Impulse Test in Professional Athletes: Sport-Specific Normative Values and Implication for Sport-Related Concussion.** *Front Neurol.* 2019 Apr 30;10:387. doi: 10.3389/fneur.2019.00387
65. Rambold HA, Barthold D, Ramat S. **Value of passive whole-body rotation: a model-based approach.** *J Neurol.* 2019 Jun 13. doi: 10.1007/s00415-019-09422-w
66. Ramat S. Understanding the rotational vestibular ocular reflex: **From differential equations to Laplace transforms.** *Progr. Brain Res.* 2019
67. Versino, M., Colnaghi, S., Corallo, G., Mandalà, M., Ramat, S. **The functional head impulse test: Comparing gain and percentage of correct answers.** *Progr. Brain Res.* 2019
68. Bertolini, G., Romano, F., Feddermann-Demont, N., (...), Tarnutzer, A.A., Ramat, S. **Non-linearity in gaze holding: Experimental results and possible mechanisms.** *Progr. Brain Res.* 2019
69. Starkov D, Guinand N, Lucieer F, Ranieri M, Cavuscens S, Pleshkov M, Guyot JP, Kingma H, Ramat S, Perez-Fornos A, van de Berg R. **Restoring the High-Frequency Dynamic Visual Acuity with a Vestibular Implant Prototype in Humans.** *Audiol Neurootol.* 2020;25(1-2):91-95. doi: 10.1159/000503677
70. Guerra BMV, Ramat S, Beltrami G, Schmid M, **Automatic Pose Recognition for Monitoring Dangerous Situations in Ambient-Assisted Living.** *Front Bioeng Biotech.* 2020; 8:415. doi: 10.3389/fbioe.2020.00415

Refereed abstracts and proceedings

1. S. Ramat, D. Zambarbieri: **A mathematical model of VOR adaptation.** Proc. 9th European Conference on Eye Movements, ECEM9, p. 115, 1997
2. S. Ramat, R. Schmid, D. Zambarbieri: **Parametric Changes in the VOR During Adaptation and Habituation** Proc. VIII Mediterranean Conference on Medical and Biological Engineering and Computing, MEDICON 98, 1998
3. S. Ramat, R. Schmid, D. Zambarbieri, G. Mageses: **Learning processes in the vestibulo-saccadic pathway,** Proc. Joint BMES-EMBS conference, 13-16 Oct. 1999, Atlanta (GA), 1999
4. S. Ramat, G. Mageses, R. Schmid, D. Zambarbieri: **The generation of vestibular nystagmus: a neural network approach,** Proc. IEEE-INNS-ENNS International Joint Conference on Neural Networks, 24-27 Jul. 2000, Como, Italy
5. R. Bhidayasiri, J.T. Somers, J.I. Kim, S. Ramat, R.J. Leigh. **Saccadic oscillations induced by combined saccadic-vergence movements.** *Neurology* 54 (Suppl. 3), A170, 2000
6. D.S. Zee, S. Ramat, L.B. Minor **The head heave maneuver: A new bedside test of the function of the utricle.** *Neurology* 56 (8): A17 (Suppl. 3), 2001

7. C. Robino, S. Ramat, D. Zambardi **Eye movement analysis for quantitative evaluation of a distance learning system**, Proc. 11th European Conference on Eye Movements, ECEM11, 22-25 August 2001, Turku, Finland
8. S. Ramat, D.S. Zee: **Ocular motor response to abrupt inter-aural translations in normal humans**. Proc. The Neurobiology of eye movements: from molecules to behavior. Case Western Reserve University Cleveland, Ohio; 4-6 October 2001.
9. G. Magenes, S. Ramat, E. Secco: **Life-like sensorimotor control: from biological systems to artifacts**. Proc. Third international conference on sensorimotor control in man and machines, Marseille, France, 6-7 October 2001
10. R.J. Leigh, S. Ramat, D.S. Zee **High frequency saccadic oscillations are generated by brain stem, not cerebellar neurons** J. Neurol Neurosurg PS 73 (2): 220-220 Aug 2002
11. M. Shelhamer, D. S. Zee, S. Ramat **Adaptation of the response to head heaves, surges and thrusts**, J Vestib Res, 11: 188-9, 2002
12. S. Ramat, D. S. Zee **Human responses to vestibular and visual stimuli moving in depth: similarities and differences**, J Vestib Res, 11: 297, 2002
13. S. Ramat, D. Straumann, D. S. Zee **Expectation and short-term learning in the interaural translational (t)-VOR**, J Vestib Res, 11: 303, 2002
14. F. Karmali, S. Ramat, M. Shelhamer **Vertical skew due to varying gravito-inertial forces: a possible consequence of otolith asymmetry**, J Vestib Res, 11: 330, 2002
15. S. Ramat, D. Straumann, D. S. Zee **Prediction and anticipation in the interaural translational VOR**, J Vestib Res, 14: 111-2, 2004
16. F. Karmali, S. Ramat, M. Shelhamer **Vertical skew as a function of gravity: a possible consequence of otolith asymmetry**, J Vestib Res, 14: 169-70, 2004
17. S. Ramat, G. Magenes **A model based approach to latency detection in ocular motor responses**, J Vestib Res, 14: 204, 2004
18. S. Ramat, G. Magenes, **A model based approach to latency detection in behavioral responses**, Proc. X Mediterranean Conference on Medical and Biological Engineering, MEDICON 04, Ischia, July 31- August 5, 2004
19. S. Ramat, C.J. Bockisch, K.P. Weber, A. Tarnutzer, D. Straumann, **The asymmetry of pitch VOR to acceleration steps**, Proc. 13th European Conference on Eye Movements, ECEM13, Bern, Switzerland, 14-18 August 2005
20. S. Ramat, D. Pré, G. Magenes **An internal model of self-motion based on inertial signals**. 28th IEEE EMBS Annual International Conference, Aug 30-Sept 3, 2006, New York City, New York, USA
21. G. Bertolini, S. Ramat **Identification and recognition of objects in color stereo images using a hierarchical SOM**, 4th Canadian Conference on Computer and Robot Vision, IEEE Computer Society, 28-30 May 2007, Montreal, Quebec, Canada, p. 297-304.
22. G. Bertolini, S. Ramat **A Hierarchical SOM to Identify and Recognize Objects in Sequences of Stereo Images**, IFMBE Proceedings MEDICON 2007 "11th Mediterranean Conference on Medical and Biological Engineering and Computing", IFMBE Proceedings Series (ISSN: 1680-0737), Volume 16, 2007, Ljubljana, Slovenia, CD.
23. D. Curone, F. Lunghi, G. Magenes, S. Ramat, **A model arm for testing motor control theories on corrective movements during reaching** IFMBE Proceedings MEDICON 2007

- “11th Mediterranean Conference on Medical and Biological Engineering and Computing”, IFMBE Proceedings Series (ISSN: 1680-0737), Volume 16, 2007, Ljubljana, Slovenia, CD
24. G. Bertolini, C. J. Bockisch, D. Straumann, D. S. Zee, S. Ramat, **Estimating the time constant of pitch rVOR by separation of otoliths and semicircular canals contributions.** 30th IEEE EMBS Annual International Conference, Aug 20-24, 2008, Vancouver, British Columbia, Canada
 25. G. Bertolini, A. Palla, S. Ramat, **Fitting rVOR responses using current models.** 31st IEEE EMBS Annual International Conference, Sep 2-6, 2009, Minneapolis, MN, USA, pp. 3259-62, 2009.
 26. A. Böhler, M. Mandalà, S. Ramat **A computer program for the functional assessment of the rotational vestibulo-ocular reflex (VOR),** IFMBE Proceedings MEDICON 2010 “12th Mediterranean Conference on Medical and Biological Engineering and Computing”, IFMBE Proceedings Series, Volume 29, 2010, Thessaloniki, Greece, pp. 502–505.
 27. A. Turcato, S. Ramat **Studying postural sway using wearable sensors: fall prediction.** IFMBE Proceedings MEDICON 2010 “12th Mediterranean Conference on Medical and Biological Engineering and Computing”, IFMBE Proceedings Series, Volume 29, 2010, Thessaloniki, Greece, pp. 620–623.
 28. A. Turcato, S. Ramat **Predicting losses of balance during upright stance: evaluation of a novel approach based on wearable accelerometers.** 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4, 2010
 29. A. Böhler, M. Mandalà, S. Ramat **A software program for the Head Impulse Testing Device (HITD).** 32nd Annual International Conference of the IEEE EMBS Buenos Aires, Argentina, August 31 - September 4, 2010
 30. S. Colnaghi, S. Ramat, E. D’Angelo, A. Cortese, G. Beltrami, A. Moglia, M. Versino **Theta burst stimulation of the cerebellum impairs motor learning in humans.** Front. Neurosci. Conference Abstract: The Cerebellum: from neurons to higher control and cognition., 2010
 31. A. Turcato, S. Ramat **A computational framework for the standardization of motion analysis exploiting wearable inertial sensors.** Conf Proc IEEE Eng Med Biol Soc. 2011; 2011:4963-6.
 32. E. Bassani, G. Bertolotti, A. Cristiani, S. Ramat. **Evaluating squat and countermovement jumps based on a wearable accelerometer: preliminary results.** Sport Sci Health, Vol. 9 (Suppl 1), 2013.
 33. G. Bertolotti, A. Cristiani, M. Senna, S. Ramat. **How do shock-absorber insoles influence the execution of a gymnastic vault?** Sport Sci Health, Vol. 9 (Suppl 1), 2013
 34. G. Bertolotti, A. Cristiani, S. Ramat. **Foot-worn electronic devices for fitness and sport Studies.** Sport Sci Health, Vol. 9 (Suppl 1), 2013
 35. A. Turcato, E. Soda, M. Beria, S. Ramat. **Kinematic analysis of rowing: a powerful training tool for coaches and athletes.** Sport Sci Health, Vol. 9 (Suppl 1), 2013
 36. S. Ramat, N. Caramia. **A General Purpose Approach to BCI Feature Computation Based on a Genetic Algorithm: Preliminary Results,** XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013, 1714-1717, 2014, Springer International Publishing

37. P. Colagiorgio, G. Bertolini, C. Bockisch, D. Straumann, S. Ramat. **Dynamics of learning in the open loop VOR**. XIII Mediterranean Conference on Medical and Biological Engineering and Computing 2013, 1675-1678,2014, Springer International Publishing
38. S. Ramat, N. Caramia . **Feature computation for BCI applications: A general purpose approach using a genetic algorithm. Preliminary results**. Neural Engineering (NER), 2013 6th International IEEE/EMBS Conference, 1315-1318, IEEE
39. P Colagiorgio, F Romano, F Sardi, M Moraschini, A Sozzi, M Bejor, G Ricevuti, A Buizza, S Ramat. (2014); **Affordable, automatic quantitative fall risk assessment based on clinical balance scales and Kinect data**. Conf Proc IEEE Eng Med Biol Soc.;2014:3500-3. doi: 10.1109/EMBC.2014.6944377.
40. A Cristiani, GM Bertolotti, M Dainotti, P Colagiorgio, F Romano, S Ramat (2014); **A wearable system for measuring limb movements and balance control abilities based on a modular and low-cost inertial unit**. Conf Proc IEEE Eng Med Biol Soc. 2014:3496-9. doi: 10.1109/EMBC.2014.6944376.
41. F Romano, P Colagiorgio, A Buizza, F Sardi, S Ramat. **Extraction of traditional COP-based features from COM sway in postural stability evaluation**. Conf Proc IEEE Eng Med Biol Soc. 2015 Aug;2015:3715-8. doi: 10.1109/EMBC.2015.7319200.

Proceedings of international conferences

1. D. Zambarbieri, S. Ramat, C. Robino: **Technical aspects in the recording of scanpath eye movements**. Proc. ETRA 2000 Conference, ACM SIGGRAPH, p.116, 2000.
2. D. Zambarbieri, C. Robino, S. Ramat: **Eye movement analysis during visual exploration of graphical interfaces**. Proc. Visual Attention Mechanism Conference, Plenum Press, 2001.
3. G. Danese, I. De Lotto, F. Leporati, A. Quaglini, S. Ramat, G. Tecchiolli: **A parallel neurochip for neural networks implementing the reactive tabu search algorithm: application case studies**. Proc. of ninth Euromicro Workshop on parallel and distributed processing, 7-9 February 2001, p. 273 – 280
4. S. Ramat, D.S. Zee **The translational vestibulo ocular reflex (TVOR) in humans: responses to abrupt, high-acceleration stimuli**. Society for Neuroscience Abstracts, 31st Meeting, San Diego, 10-15 November 2001
5. R.J. Leigh, S. Ramat, D.S. Zee, L.M. Optican **High-frequency saccadic oscillations are generated by brainstem, not cerebellar, neurons**. Proc. Association of British Neurologists meeting, Oxford, April 3 – 5, 2002
6. S. Ramat, D. Straumann, D.S. Zee **Expectation and short-term learning in the interaural (t)-VOR**. ARVO, 2002 annual meeting, Fort Lauderdale, 5-10 May 2002
7. D. S. Zee, S. Ramat **Responses to vestibular and visual stimuli moving in depth in humans: similarities and differences**. Society for Neuroscience Abstracts, 32nd Meeting, Orlando, 2-7 November 2002
8. S. Ramat, R.J. Leigh, D.S. Zee, L.M. Optican **Coupling and post - inhibitory rebound firing in brain stem excitatory and inhibitory burst neurons may explain high - frequency saccadic oscillations**. Society for Neuroscience Abstracts, 32nd Meeting, Orlando, FL, 2-7 November 2002

9. S. Ramat, R.J. Leigh, D.S. Zee, L.M. Optican **Coupling and post - inhibitory rebound firing in brain stem excitatory and inhibitory burst neurons may explain high - frequency saccadic oscillations.** Neural control of movement, Santa Barbara, CA, 22-26 April 2003
10. O. Bergamin, D.C. Roberts, S. Ramat, D. Straumann, D. S. Zee **Influence of Orientation of exiting wire of search coil annulus on torsion following saccades,** ARVO, 2003 annual meeting, Fort Lauderdale, 4-9 May 2003
11. F. Karmali, S. Ramat, M. Shelhamer. **Vertical skew as a function of gravity : a possible consequence of otolith asymmetry.** Program No. 268.15. 2003 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2003. Online
12. S. Ramat, D.S. Straumann, D.S. Zee **Prediction and anticipation in the interaural translational VOR,** Neural control of movement society, 14th annual meeting, Sitges, March 28 -April 3, 2004
13. F. Karmali, S. Ramat, M. Shelhamer, D. Straumann, D. Solomon **Vertical skew in slow and fast pitch vor: evidence for otolithic influence** Program No. 391.23. 2005 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2005. Online
14. A.A. Tarnutzer, D.S. Zee, S. Ramat, D. Straumann **Pursuit responses to target steps during ongoing tracking** Program No. 475.13. 2005 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2005. Online
15. S. Ramat, R.J. Leigh, D.S. Zee, L.M. **Familial microsaccadic oscillations may be due to alterations in the inhibitory premotor circuit** Program No. 475.15. 2005 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience, 2005. Online
16. Haslwanter T, Jaeger R, Keppler V, Aichinger M, Stoettinger M, Ramat S **Putting the head on the neck: a realistic biomechanic model of human head-neck mechanics.** Proceedings of the 2nd European Modeling and Simulation Symposium, Barcelona, Spain, Oct 4-6, 2006
17. S. Ramat, A.G. Shaik, D.S. Zee, **Novel molecular mechanism of essential tremor: A computational approach.** Program No. 211.10 2006 Abstract Viewer/Itinerary Planner. Atlanta, GA: Society for Neuroscience, 2006. Online
18. A.G. Shaik, K. Miura, S. Ramat, L.M. Optican, D.S. Zee **Novel molecular mechanism of saccadic oscillations.** Program No. 819.15/Y21 2006 Abstract Viewer/Itinerary Planner. Atlanta, GA: Society for Neuroscience, 2006. Online
19. G. Bertolini, S. Ramat, C.J. Bockisch, J. Laurens, A. Palla, D. Straumann, D.S. Zee. **Gravity effects on the human vertical rVOR.** Program No. 18.13 2008 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online.
20. S. Ramat, C. Bourdin, G. Magenes, J.-L. Vercher. **Correction times in pointing movements depend on the timing of the target displacement.** Program No. 319.13 2008 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online.
21. G. Bertolini, S. Marti, S. Ramat, D. Straumann, A. Palla, **Contribution of velocity-storage in vestibular self-motion perception in cerebellar patients.** Eye movements and Vision: a symposium in honor of Fred Miles, April 2009
22. G. Bertolini, S. Marti, S. Ramat, D. Straumann, A. Palla, **Contribution of velocity-storage in vestibular self motion perception in cerebellar patient** Program No. 357.13 2009 Neuroscience Meeting Planner, Chicago, IL, Society for Neuroscience, 2009, Online.

23. A. Tarnutzer, G. Bertolini, A. Palla, S. Ramat, S. Marti, D. Straumann, N. Shinah, N. Zaher, A.G. Shaikh, A. Lasker, D.S. Zee, **Age-dependent prolongation of the time constant of post-rotatory nystagmus and post-rotatory perceived angular velocity** Program No. 357.12 2009 Neuroscience Meeting Planner, Chicago, IL, Society for Neuroscience, 2009, Online.
24. S. Ramat, G. Bertolini, **The VSM in the vertical rVOR in humans**, Program No. 760.7 2009 Neuroscience Meeting Planner, Chicago, IL, Society for Neuroscience, 2009, Online.
25. G. Bertolini, S. Marti, S. Ramat, D. Straumann, A. Palla, **Velocity-storage contribution to vestibular self-motion perception: cerebellar patients vs. healthy subjects**, 20th Ocular Motor Meeting, MüTüZü proceedings, Monaco 2010
26. Marti S, Bertolini G, Ramat S, Straumann D, Palla A, **Self-motion perception parallels the angular vestibulo-ocular reflex during earth-vertical yaw and pitch rotations in patients with midline cerebellar dysfunction**, XXVI Bárány Society Meeting proceedings, Reykjavik 2010
27. Colagiorgio P, Ramat S. **Generalized Saccadic Adaptation**, 22nd Ocular Motor Meeting, Zurich-Munich, Zurich, January 27-28,2012.
28. Federighi P, Ramat S, Zee D, Leigh R, Piu P, Rufa A. **Dynamic Properties of Saccades Identify Forms of Spinocerebellar Ataxia**. 64th Annual Meeting of the American-Academy-of-Neurology (AAN), New Orleans, LA, Apr 21-28, 2012
29. Colagiorgio P, Colnaghi S, Koch G, Ramat S, Versino M, D'Angelo E. **Effects of continuous theta burst stimulation over the cerebellar vermis on saccade adaptation are counteracted by NMDA receptor antagonist**. Prog. No. 379.06, 2012 Neuroscience Meeting Planner, New Orleans, LA, Society for Neuroscience, 2012, Online.
30. Ramat S, Colnaghi S, Colagiorgio P, D'Angelo E, Koch G, Versino M. **Effects of continuous theta burst stimulation over the cerebellar vermis on double-step saccade adaptation**. Prog. No. 379.09, 2012 Neuroscience Meeting Planner, New Orleans, LA, Society for Neuroscience, 2012, Online.
31. Federighi P, Ramat S, Rosini F, Pretegianni E, Federico A, Rufa A. **Neuro-Ophthalmological Findings in Two Italian Adult Siblings with Ataxia-Telangiectasia-Like Disorder** 65th Annual Meeting of the American-Academy-of-Neurology (AAN), San Diego, CA, Mar 16-23, 2013
32. Soria C., Diomede L., Giorgetti S., Romeo M., Marchese L., Mangione P.P., Zorzoli I., Fomano F., Ramat S., Salmona M., Bellotti V., Stoppini M. **C. elegans expressing human β 2-microglobulin: a novel model for studying the amyloid toxicity**, Prog. No. 448C, 19th International C. elegans meeting, Los Angeles, CA, The Genetics Society of America, 2013

Editor of scientific volumes

1. S. Ramat, D. Straumann, Eds, **Clinical And Basic Ocular Motor Research**, Ann N Y Acad Sci; Vol. 1039, 2005
2. S. Ramat, A.G. Shaikh, Eds, **Mathematical Modelling in Motor Neuroscience: State of the art and Translation to the Clinic: Ocular Motor Plant and Gaze Stabilization Mechanisms**, Progr. Brain Res; Vol. 248, 2019

3. S. Ramat, A.G. Shaikh, Eds, **Mathematical Modelling in Motor Neuroscience: State of the art and Translation to the Clinic: Gaze Orienting Mechanisms and Disease**, Progr. Brain Res; Vol. 249, 2019

Chapters in international books

1. S. Ramat and B.T. Crane. **Otolith testing: the translational VOR**. In: Vertigo and Imbalance: Clinical neurophysiology of the Vestibular System, Vol. 9. S.D.Z. Eggers and D.S. Zee Eds., Elsevier B.V., 2009
2. G Magenes, F Lunghi, S Ramat. **Soft Computing in Signal and Data Analysis: Neural Networks, Neuro-Fuzzy Networks, and Genetic Algorithms** - in Advanced Methods of Biomedical Signal Processing (eds S. Cerutti and C. Marchesi), John Wiley & Sons, Inc., Hoboken, NJ, USA. 2011

Chapters Italian books

1. R. Schmid, D. Zambarbieri, S. Ramat: **Ruolo della visione nell'adattamento e plasticità del riflesso vestibolo-oculomotore**, in: *Le Interazioni visuo-vestibolari*, S. Traccis and D. Zambarbieri eds., Patron Ed., Bologna, p. 165-180, 1996
2. G. Magenes, S. Ramat **La visione artificiale binoculare nei robot antropomorfi** in: *La coordinazione dei movimenti binoculari*, P. Inchingolo and P. Perissutti eds., Edizioni Goliardiche, p.265-283, 2000
3. P. Magni, S. Ramat **Principi di sicurezza elettrica in ambito sanitario** in: *La gestione della strumentazione biomedica nella nuova organizzazione sanitaria*, A. Buizza, G. Genduso e A. Pagliaro eds., pag. 43-62, 2000
4. G. Magenes, F. Lunghi, S. Ramat **Soft computing per l'analisi di dati e segnali: reti neurali, neurofuzzy ed algoritmi genetici**, in *Metodi avanzati di elaborazione di segnali biomedici*, S. Cerutti e C. Marchesi eds., Patron Ed., Bologna, pag. 451-487, 2004

Conference organization and session chair

Clinical and Basic Ocular Motor Research, 3-5 July 2004, Siena, **Scientific Committee, Session Chair**

Basic and Clinical Ocular Motor and Vestibular Research, 25-27 March 2011, Buenos Aires, **Scientific Committee**

Third Conference of the Italian National Bioengineering Group (GNB), 26-29 June 2012, Rome, **Scientific Committee**

The vestibular system, a clinical and scientific update in Siena, 5-6 April 2013, Siena, **Scientific Committee, Session Chair**

Fourth Conference of the Italian National Bioengineering Group (GNB), 25-27 June 2014, Pavia, **Scientific Committee**

XXVIII Bárány Society Meeting, 25-28 may 2014, Buenos Aires, Argentina, **Session Chair**

Brain Plasticity of the Vestibular and Ocular Motor Systems, Satellite of the FENS Forum 2014, Organizer, Scientific Committee, **Session Chair**

2015 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), August 25 -29 2015, Milan, Italy, **Session Chair**.

XXIX Barany Society Meeting, June 5 - 8 2016, Seoul, South Korea, **Session Chair**.

XXX Barany Society Meeting, June 5 - 8 2016, Seoul, South Korea, **Session Chair**.

