

# Steve N'Guyen, PhD

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**Current situation:** Postdoc researcher in Computational Neuroscience and Robotics.  
**Scientific interest:** Modeling and robotics implementation of sensorimotor loops and action selection including human locomotion and saccadic eye movements.

## Education

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2006-2010    **PhD in Computer Science ("very honorable")**  
*Institution:* Université Pierre et Marie Curie (UPMC), Paris 6, France.  
*Supervisors:* Dr. Jean-Arcady Meyer and Patrick Pirim.  
*Title:* Development of the vibrissal system of the robot rat Psikharpax and contribution to the integration of its visual, auditive and tactile abilities.

2005-2006    **MSc in Computer Science (with honors)**  
*Institution:* Université Pierre et Marie Curie (UPMC), Paris 6, France.  
*Supervisors:* Dr. Jean-Arcady Meyer and Patrick Pirim.  
*Title:* Study and development of an artificial whiskers system.

2001-2006    **Engineer diploma**  
*Institution:* École Centrale d'Électronique (ECE), Paris, France.  
*Specialty:* Embedded systems (Computer Science and Electronics).

## Research

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2010-present    **PostDoc researcher**  
*Institution:* LPPA - Collège de France CNRS, Paris, France.  
*Supervisors:* Prof. Alain Berthoz, Dr. Jacques Droulez  
*Subject:* Study and modeling of biped locomotion using Bayesian approach and robotics implementation (for Aldebaran ROMEO walk).  
Neural modeling of Superior Colliculus and Basal Ganglia interaction with reinforcement learning (in collaboration with Dr. Benoît Girard).  
*Projects:* RoboSoM (European project ICT-2009.2.1)  
ROMEO and ROMEO2 (french government projects).

2006-2010    **PhD student and engineer**  
*Institution:* ISIR, CNRS UMR7222 UPMC & Brain Vision Systems company.  
*Supervisors:* Dr. Jean-Arcady Meyer and Patrick Pirim.  
*Title:* Development of the vibrissal system of the robot rat Psikharpax and contribution to the integration of its visual, auditive and tactile abilities.  
*Projects:* ICEA (European project IST 027819)  
BIOTACT (European project ICT-2007.8.3)  
INTERACT (french government project).

## Teaching

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2007-2009    *Institution:* Polytech Paris-UPMC Engineering School, Université Pierre et Marie Curie.  
*Level:* L3 (License) Robotics.  
*Subject:* C/C++ programming (Lab work + Project supervision: 72h)

2007    *Institution:* Université Sorbonne Paris 1.  
*Level:* L3 (License) Applied Computer Science for Company Management (MIAGE).  
*Subject:* UNIX systems and programming (Lecture + Lab work: 36h)

## References

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<b>Jacques Droulez, M.D., Ph.D.</b> <a href="mailto:jacques.droulez@college-de-france.fr">jacques.droulez@college-de-france.fr</a>	<b>Pierre Bessière, Ph.D.</b> <a href="mailto:pierre.bessiere@college-de-france.fr">pierre.bessiere@college-de-france.fr</a>	<b>Jean-Arcady Meyer, Ph.D.</b> <a href="mailto:jeanarcady.meyer@free.fr">jeanarcady.meyer@free.fr</a>	<b>Benoît Girard, Ph.D.</b> <a href="mailto:girard@isir.upmc.fr">girard@isir.upmc.fr</a>
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## Technical skills

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CS:	Reinforcement learning, Neural Networks, Planning, Genetic Algorithms, Self Organizing Maps, Probabilistic Modeling, Computer Vision.
Programming:	C, C++, Python Basic knowledge in various languages (Java, Asm, Pascal, Octave, Lisp, Matlab).
Robotics:	ROS, NaoQi, Player/Stage, Webots Experience on humanoids (Nao, SABIAN) and wheeled robots (E-puck, Pioneer). Custom implementation (Psikharpax and Bioloid/Dynamixel based humanoids).
Electronics:	CAO, microcontroller, VHDL. PCB conception and implementation.
Languages:	French (native), English.

## Public dissemination

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2010	<ul style="list-style-type: none"><li>• National science festival. 2 days demonstration of the Psikharpax robot (UPMC).</li><li>• Arte TV channel show “Global-Mag” on bio-inspired systems. Psikharpax demonstration.</li><li>• Wide-audience “Robots and humans” event at the Cité des Sciences (Paris). Demonstrations of various abilities of Psikharpax.</li></ul>
2009	<ul style="list-style-type: none"><li>• National science festival. 2 days demonstration of the Psikharpax robot (UPMC).</li><li>• Documentary film for CNRS about Psikharpax (demonstration and interview).</li><li>• Wide-audience “Futur en Seine” exhibition (Paris). Demonstration of BVS vision system.</li><li>• European Research and Innovation Fair (Paris). Demonstration of BVS vision system and Psikharpax.</li></ul>
2008	<ul style="list-style-type: none"><li>• Wide-audience “Ville européenne des sciences” exhibition (Grand Palais, Paris). 3 days demonstration of the Psikharpax robot (<math>\approx 43000</math> visitors).</li></ul>
2007	<ul style="list-style-type: none"><li>• National science festival. 3 days demonstration of the Psikharpax robot (UPMC).</li><li>• National science festival. 2 days demonstration of the Psikharpax robot (UPMC).</li></ul>

## Publications

### Journals

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2013	C. N. Authié, P. M. Hilt, <b>N’Guyen, S.</b> , A. Berthoz, and D. Bennequin. Human gaze anticipation during locomotion with and without visual information. ( <i>Submitted</i> ), 2013
	<b>N’Guyen, S.</b> , C. Thurat, and B. Girard. Saccade learning with concurrent cortical and subcortical basal ganglia loops. ( <i>in revision</i> ), 2013
	<b>N’Guyen, S.</b> , C. Moulin-Frier, and J. Droulez. Decision making under uncertainty: a quasimetric approach. <i>PLoS One</i> ( <i>accepted</i> ), 2013
2012	K. Caluwaerts, M. Staffa, <b>N’Guyen, S.</b> , C. Grand, L. Dollé, A. Favre-Félix, B. Girard, and M. Khamassi. A biologically inspired meta-control navigation system for the psikharpax rat robot. <i>Bioinspiration &amp; Biomimetics</i> , 7(2):1–29, 2012

### Conferences

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2013	C. N. Authié, P. M. Hilt, <b>N’Guyen, S.</b> , A. Berthoz, and D. Bennequin. Gaze anticipation during human locomotion remains in darkness. In <i>International Society for Posture &amp; Gait Research conference (ISPGR 2013)</i> . ( <i>Abstract &amp; Talk</i> ), 2013
2012	K. Caluwaerts, A. Favre-Félix, M. Staffa, <b>N’Guyen, S.</b> , C. Grand, B. Girard, and M. Khamassi. Neuro-inspired navigation strategies shifting for robots: Integration of a multiple landmark taxon strategy. <i>Biomimetic and Biohybrid Systems</i> , pages 62–73, 2012
	<b>N’Guyen, S.</b> Saccadic behavior in artificial systems. In <i>NeuroComp / KEOpS’12 workshop</i> , Bordeaux, France, 2012. (invited talk)

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- 2012 C. Thurat, **N'Guyen, S.**, and B. Girard. Neural accumulator model of the subcortical target selection processes for saccades. In *NeuroComp / KEOpS'12 workshop, Bordeaux, France (abstract & poster)*, pages 1–7, 2012
- C. Thurat, **N'Guyen, S.**, and B. Girard. Neural model of the subcortical saccadic selection in the tecto-basal loops. In *2nd Symposium on Biological Decision Making. CRICM, Paris. (Poster).*, 2012
- K. Caluwaerts, M. Staffa, and M. **N'Guyen, S.** and. A biologically inspired meta-control navigation system for the psikharpax rat robot. In *2nd Symposium on Biological Decision Making. CRICM, Paris. (Poster).*, 2012
- 2011 **N'Guyen, S.**, J. Droulez, and A. Berthoz. A probabilistic model of equilibrium perception. In *14th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR2011)*, pages 831–838, 2011
- N'Guyen, S.**, P. Pirim, and J.A. Meyer. Texture discrimination with artificial whiskers in the robot-rat psikharpax. *Biomedical Engineering Systems and Technologies: Third International Joint Conference, BIOSTEC 2010, Valencia, Spain, January 20-23, 2010, Revised Selected Papers*, 127:252, 2011
- K. Caluwaerts, C. Grand, **N'Guyen, S.**, L. Dollé, A. Guillot, and M. Khamassi. Design of a biologically inspired navigation system for the psikharpax rodent robot. In *International workshop on bio-inspired robots (CFP-2011), (Abstracts)*, 2011
- C. Thurat, **N'Guyen, S.**, and B. Girard. Subcortical saccadic selection processes: A model of the tecto-basal loops. In *16th European Conference on Eye Movements (ECEM 2011). (Abstract & Poster).*, page 84, 2011
- 2010 **N'Guyen, S.**, P. Pirim, J.A. Meyer, and B. Girard. An integrated neuromimetic model of the saccadic eye movements for the psikharpax robot. In *From Animals to Animats 11, SAB2010*, pages 114–125. Springer Berlin/Heidelberg, 2010
- M. Bernard, **N'Guyen, S.**, P. Pirim, A. Guillot, J.A. Meyer, and B. Gas. A supramodal vibrissa tactile and auditory model for texture recognition. In *From Animals to Animats 11, SAB2010*, pages 188–198. Springer Berlin/Heidelberg, 2010
- N'Guyen, S.**, P. Pirim, and J.A. Meyer. Tactile texture discrimination in the robot rat psikharpax. In *Proc. Int. Conf. Bio-Inspired Systems and Signal Processing, (Valencia, Spain)*, 2010
- M. Bernard, **N'Guyen, S.**, P. Pirim, B. Gas, and J.A. Meyer. Phonotaxis behavior in the artificial rat psikharpax. In *International Symposium on Robotics and Intelligent Sensors, IRIS2010. Nagoya, Japon.*, pages 118–122, 2010
- 2009 **N'Guyen, S.**, P. Pirim, and JA Meyer. Elastomer-based tactile sensor array for the artificial rat psikharpax. In *ISEF2009*, 2009