

Payam Piray

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Affiliations

2018 Jan-now, Post-doctoral researcher, Princeton Neuroscience Institute, Princeton University

Research Interests

Systems and cognitive neurosciences, Computational psychiatry.

Research Experiences

- 2016 Dec-2017 Dec, Post-doctoral researcher, Donders Institute.
- 2011 Dec-2016 Dec, Doctoral researcher, Donders Institute.

Education

- Dec 2016, Ph.D. *cum laude*, Donders Institute, Radboud University.
Thesis: “Compute to Learn. Neural implementation of computations underlying associative learning and decision making”.
Advisors: Ivan Toni and Roshan Cools
- July 2010, M.S. (Excellent Thesis distinction), Control Engineering, University of Tehran.
- June 2008, B.Sc., Control Engineering, University of Tehran.

Awards

- 2013, Student travel award, Reinforcement Learning and Decision Making meeting, Princeton.
- 2011, University of Southern California Neuroscience Graduate Program Fellowship.

Publications

- Timmer M.H.M, Sescousse G, Esselink R.A.J, **Piray, P**, Cools R. “Mechanisms underlying dopamine-induced risky choice in Parkinsons disease with and without depression (history)”, *Computational Psychiatry* (2017).
- **Piray, P**, Toni I, Cools R. “Human choice strategy varies with anatomical projections from ventromedial prefrontal cortex to medial striatum”, *Journal of Neuroscience* (2016).
- **Piray, P**, den Ouden H, van der Schaaf M, Toni I, Cools R. “Dopaminergic modulation of the functional ventrodorsal architecture of the human striatum”, *Cerebral Cortex* (2015).
- **Piray, P**, Zeighami Y, Bahrami F, Eissa A.M, Hewedi D.H, Moustafa A.A. “Impulse control disorders in Parkinsons disease are associated with dysfunction in stimulus valuation but not action valuation”, *Journal of Neuroscience* (2014).
- Monterosso J, **Piray, P**, Luo S. “Neuroeconomics and the study of addiction”, *Biological Psychiatry* (2012).
- Keramati M.M, Dezfouli A, **Piray, P**. “Understanding addiction as a pathological state of multiple decision making processes: a neurocomputational perspective”, in *Computational Neuroscience of Drug Addiction*, Eds. Gutkin B., Ahmed S., Springer (2012).
- **Piray, P**. “The role of dorsal striatal D2-like receptors in reversal learning: a reinforcement learning viewpoint”, *Journal of Neuroscience* (2011).
- Keramati M.M*, Dezfouli A*, **Piray, P**. “Speed/accuracy trade-off between the habitual and the goal-directed processes”, *PLoS Computational Biology* (2011).

- **Piray, P**, Keramati M.M*, Dezfouli A*, Lucas C, Mokri A. “Individual differences in nucleus accumbens dopamine receptors predict development of addiction-like behavior: a computational approach”, *Neural Computation* (2010).
- Dezfouli A, **Piray, P**, Keramati M.M, Ekhtiari H, Lucas C, Mokri A. “A neurocomputational model for cocaine addiction”, *Neural Computation* (2009).

[*equal contribution]

In process works

- **Piray, P**, Ly V, Roelofs K, Cools R, Toni I. “Emotionally aversive contexts suppress neural systems underlying learning in socially anxious individuals”.
- **Piray, P**, et al. “Hierarchical Bayesian inference for model fitting and comparison”.

Teaching & Training

- 2016, Toolkit course: “computational approaches to neuroimaging”, Donders Institute.
- 2015, Radboud summer school: “neurocomputational approaches to decision making”, Donders Institute.
- 2015, Toolkit course: “computational approaches to neuroimaging”, Donders Institute.
- Since 2014, member of fMRI analysis meetings organizing committee, Donders Institute.
- Supervision of 6 master students’ rotation and 1 bachelor student.

Workshops/Conferences organized

- Computational psychiatry symposium, Nijmegen, 2016 (co-organizers: Ivan Toni, Roshan Cools).

Talks

- Amsterdam Medical Center, Amsterdam, Feb 2017.
- Oral session speaker at Society for Neuroscience meeting, Chicago, Nov 2015.

Ad hoc reviewer

Cerebral Cortex (2), Clinical Psychological Science (1), Journal of Cognitive Neuroscience (3), Journal of Neuroscience (11), Proceedings of the National Academy of Sciences (1).

References

- Prof. Nathaniel Daw, Princeton University.
- Prof. Ivan Toni, Donders Institute.
- Prof. Roshan Cools, Donders Institute.