

# SHIVAKUMAR VISWANATHAN

Current location: *Cologne, Germany*  
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## RESEARCH POSITIONS

### Postdoctoral scientist (cognitive neuroscience)

<i>Inst. for Neuroscience and Medicine, (INM-3), Forschungszentrum Jülich, Germany</i>	2018 - current
<i>Dept of Neurology, University Hospital of Cologne, Germany</i>	2014 - 2018
<i>Dept. of Psychological &amp; Brain Sciences, Univ. of California, Santa Barbara, USA</i>	2009 - 2014
<i>Dept. of Psychology, Brandeis University, Massachusetts, USA</i>	2007 - 2009

## EDUCATION

<b>Ph.D., Computer Science</b> <i>Brandeis University, Waltham, Massachusetts, USA</i>	2000 - 2007
<b>M.S., Engineering Management</b> <i>Missouri University of Science and Technology, Rolla, Missouri, USA</i>	1997 - 2001
<b>B.Eng., Mechanical Engineering</b> <i>Visvesvaraya National Institute of Technology, Nagpur, India</i>	1993 - 1997

## SELECTED PUBLICATIONS

### Journals

- **Viswanathan, S.\***, Wang, B. A. \*, Abdollahi, R. O., Daun, S., Grefkes, C. & Fink, G. R. (2018) Freely selected and instructed actions are terminated by different neural mechanisms revealed by kinematics-informed EEG. (*under review*) [\*=equal contribution]
  - **Viswanathan, S.**, Cieslak, M., & Grafton, S. T. (2012). On the geometric structure of fMRI searchlight-based information maps. *arXiv preprint arXiv:1210.6317*.
16. Rosjat, N., Liu, L., Wang, B.A., Popovych, S., Toth, T.I., **Viswanathan, S.**, Grefkes, C., Fink, G.R. & Daun, S., (2018). Aging-associated changes of movement-related functional connectivity in the human brain. *Neuropsychologia*, 117, 520 - 529.
  15. Lohmann, P., Lerche, C., Bauer, E.K. Steger., J., Stoffels, G., Blau, T., Dunkl, V., Kocher, M., **Viswanathan, S.**, Filss, C.P., Stegmayr, C., Neumaier, B., Shah, N.J., Fink, G. R., Langen, K.J. & Galldiks, N. (2018). Predicting IDH genotype in gliomas using FET PET radiomics. *Scientific Reports*, 8 (1), 13328.

14. Lohmann, P., Kocher, M., Ceccon, G., Bauer, E.K., Stoffels, G., **Viswanathan, S.**, Ruge, M.I., Neumaier, B., Shah, N.J., Fink, G. R., Langen, K.J. & Galldiks, N. (2018). Combined FET PET/MRI radiomics differentiates radiation injury from recurrent brain metastasis. *Neuroimage: Clinical*, 20, 537 - 542.
13. Liu, L., Rosjat, N., Popovych, S., Wang, B. A., Yeldesbay, A., Toth, T., **Viswanathan, S.**, Grefkes, C., Fink, G. R., & Daun, S. (2017). Age-related changes in oscillatory power affect motor action. *PLoS One*, 12(11):e0187911
12. Wang, B. A., **Viswanathan, S.**, Abdollahi, R. O., Popovych, S., Rosjat, N., Daun, S., Grefkes, C. & Fink, G. R. (2017). Frequency-specific modulations of connectivity in the ipsilateral sensorimotor cortex by different forms of movement initiation. *Neuroimage*, 159, 248 - 260.
11. Popovych, S., Rosjat, N., Toth, T. I., Wang, B. A., Liu, L., Abdollahi, R. O., **Viswanathan, S.**, Grefkes, C., Fink, G. R., & Daun, S. (2016). Movement-related phase locking in the delta-theta frequency band. *Neuroimage*, 139, 439 - 449.
10. Wang, W., **Viswanathan, S.**, Lee, T., & Grafton, S. T. (2016). Coupling between theta oscillations and cognitive control network during cross-modal visual and auditory attention: Supramodal vs modality-specific mechanisms. *PloS One*, 11(7), e0158465.
9. Michely, J., Volz, L. J., Barbe, M. T., Hoffstaedter, F., **Viswanathan, S.**, Timmermann, L., Eickhoff, S., Fink, G.R., & Grefkes, C. (2015). Dopaminergic modulation of motor network dynamics in Parkinson's disease. *Brain*, 138 (Pt 3), 664 - 678.
8. Barany, D., Maggione, V. D., **Viswanathan, S.**, Cieslak, M., & Grafton, S. T. (2014). Feature interactions enable decoding of sensorimotor transformations for goal-directed movement. *Journal of Neuroscience*, 34(20), 6860 - 6873.
7. **Viswanathan, S.**, Fritz, C., & Grafton, S.T. (2012). Telling the right hand from the left hand: Multisensory integration, not motor imagery, solves the problem. *Psychological Science*, 23(6), 598 - 607.
6. van Elk, M., **Viswanathan, S.**, van Schie, H. T., Bekkering, H., & Grafton, S.T. (2012). Pouring or chilling a bottle of wine: an fMRI study on the prospective planning of object-directed actions. *Experimental Brain Research*, 218(2), 189 - 200.
5. Nenert, R., **Viswanathan, S.**, Dubuc, D., & Visscher, K. M. (2012). Modulations of ongoing alpha oscillations predict successful short-term visual memory encoding. *Frontiers in Human Neuroscience*, 6.
4. **Viswanathan, S.**, Perl, D., Visscher, K.M., Kahana, M.J., & Sekuler, R. (2010). Homogeneity computation: How inter-item similarity in visual short term memory alters recognition. *Psychonomic Bulletin & Review*, 17(1), 59 - 65.
3. **Viswanathan, S.**, & Allada, V. (2006). Product configuration optimization for disassembly planning: a differential approach. *OMEGA: The International Journal of Management Science*, 34(6), 599 - 616.
2. **Viswanathan, S.**, & Allada, V. (2001). Product configuration analysis to support design for end-of-life disassembly. *International Journal of Production Research*, 39(8), 1733 - 1753.
1. **Viswanathan, S.**, & Allada, V. (1999). A framework for the grouping of products for flexible disassembly. *Journal of Electronics Manufacturing*, 9(1), 53 - 66.

## Book chapters

- Grafton, S. T., & **Viswanathan, S.** (2013). Rethinking the role of motor simulation in perceptual decisions, in *Progress in Motor Control*, 69 - 90. Springer New York.

## Theses

- **Viswanathan, S.** (2007). *The secondary substrate problem in co-evolution and developmental evolution*. (Doctoral dissertation, Brandeis University).
- **Viswanathan, S.** (2000). *Investigations in the design of products and factories for end-of-life disassembly*. (Master's thesis, Missouri University of Science and Technology).

## Conference proceedings (PEER REVIEWED)

8. Shell, D., **Viswanathan, S.**, Huang, Jing, Ghosh, R., Huang, Jie, Matarić, M., Lerman, K., & Sekuler, R. (2007). Spatial behavior of individuals and groups: Preliminary findings from a museum scenario. *"From sensors to human spatial concepts" workshop at the IEEE/RSJ International Conference on Intelligent Robots and Systems, San Diego*.
7. **Viswanathan, S.**, & Pollack, J.B. (2005). On the coevolutionary construction of learnable gradients. *Coevolutionary and Coadaptive Systems track, AAAI Fall Symposium 2005, Washington D.C.*
6. **Viswanathan, S.**, & Pollack, J.B. (2005). On the robustness achievable with stochastic development. *2005 NASA/DoD Conference on Evolvable Hardware (EH '05), 34 - 39, IEEE press.*
5. **Viswanathan, S.**, & Pollack, J.B. (2005). How Artificial Ontogenies can retard evolution. *SEEDS workshop at the 2005 Genetic and Evolutionary Computation Conference, 273 - 280, ACM Press.*
4. **Viswanathan, S.**, & Pollack, J.B. (2004). Towards an evolutionary-developmental approach for real-world substrates. *Proceedings of the ninth international conference on the simulation and synthesis of living systems (Artificial Life IX), Boston, USA, 45 - 50, MIT Press*
3. **Viswanathan, S.**, & Allada, V. (2000). Configuration analysis to support product redesign for end-of-life disassembly. *Proceedings of ASME DETC - Design for Manufacturing Conference, Baltimore.*
2. **Viswanathan, S.**, & Allada, V. (1999). Value-based product structure evaluation for disassembly. *Eco-Design'99: International Symposium on Environmentally Conscious Design and Inverse Manufacturing, Tokyo, 778 - 783.*
1. **Viswanathan, S.**, & Allada, V. (1998). Disassembly-oriented product classification using neural networks. *Proceedings of Artificial Neural Networks in Engineering (ANNIE) Conference, St. Louis.*

## INVITED TALKS

- Invited talk at TEDx, RWTH Aachen, 2015. [[Link](#)]
- Invited tutorial, *Introduction to multi-voxel pattern analysis*, Annual retreat of the Institute for Neuroscience and Medicine, Forschungszentrum Jülich 2015
- Guest lectures, *Introduction to multi-voxel pattern analysis*, Graduate course on Neuroimaging, Dept of Psychological & Brain Sciences, Univ. of California, Santa Barbara, Fall 2013
- Instructor (with Matthew Cieslak), *Advanced fMRI lab on multi-voxel pattern analysis*, Summer Institute in Cognitive Neuroscience, Univ. of California, Santa Barbara, 2012

## PROFESSIONAL ACTIVITIES

- Member, Program Committee, *3<sup>rd</sup> International workshop on Pattern Recognition in Neuro Imaging (PRNI)*, Philadelphia, USA 2013
- Member, Program Committee, *2<sup>nd</sup> International workshop on Pattern Recognition in Neuro Imaging (PRNI)*, London, UK, 2012

- Ad hoc reviewer: Neuroimage-Clinical, Neuroimage, Neuropsychologia, Brain Structure and Function, PLoS One, Frontiers in Neuroscience, Experimental Brain Research, Behavioral and Brain Functions, Artificial Life, Genetic Programming and Evolvable Machines

## AWARDS

- Best Paper award, *American Society of Mechanical Engineering (ASME) Design for Manufacturing conference*, Baltimore, 2000
- Trainee fellowship, *New Horizons in Human Brain Imaging: A focus on brain networks and connectivity*, O'ahu, Hawaii, 2010