

## PO-HE TSENG, PH.D

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### EDUCATION & TRAINING

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Center for Neuroengineering, Duke University, NC <b>Postdoctoral Associate (Advisor: Miguel Nicolelis)</b>	<b>2013 - 2018</b>
University of Southern California, Los Angeles, CA <b>Ph.D. in Computer Science (Advisor: Laurent Itti)</b> Dissertation: Eye-trace signatures of clinical populations under natural viewing	<b>2007 - 2012</b>
University of Southern California, Los Angeles, CA <b>MSc in Computer Science</b>	<b>2005 - 2007</b>
Laboratory of Integrated Brain Research, Taipei Veterans General Hospital, Taipei, Taiwan <b>Research Assistant (Advisor: Li-Fen Chen)</b>	<b>2004 - 2005</b>
Adaptive Intelligent Internet Agent Research Laboratory, Institute of Information Science Academia Sinica, Taipei, Taiwan <b>Research Assistant (Advisor: Chun-Nan Hsu)</b>	<b>2002 - 2004</b>
National Chaio-Tung University, Hsin-Chu City, Taiwan <b>BSc in Industry Engineering and Management</b>	<b>1998 - 2002</b>

### SUMMARY

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My research interest is to understand nervous systems in health and disease, and to interface them with machines to augment human ability and to improve the quality of life for patients.

### PUBLICATIONS

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- Tseng, P. H.**, Armengol Urpi, N., Lebedev M., Nicolelis, M. A. (2019). Decoding Movements from Cortical Ensemble Activity Using a Long Short-Term Memory Recurrent Network. *Neural Computation*
- Zhang, C., Paolozza, A., **Tseng, P. H.**, Reynolds, J., Munoz, D. P., Itti, L. (2019). Detection of Children/Youth with Fetal Alcohol Spectrum Disorder through Eye Movement, Psychometric and Neuroimaging Data. *Frontiers in Neurology* 10, 80.
- Tseng, P. H.**, Rajangam, S., Lehew, G., Lebedev, M. A., Nicolelis, M. A. (2018). Interbrain cortical synchronization encodes multiple aspects of social interactions in monkey pairs. *Scientific Reports*, 8.
- Yin, A., **Tseng, P. H.**, Rajangam, S., Lebedev, M. A., Nicolelis, M. A. (2018). Place cell-like activity in the primary sensorimotor and premotor cortex during monkey whole-body navigation. *Scientific Reports*, 8.
- Lebedev, M. A., **Tseng P. H.**, Ifft, P. J, Ochei, D., Nicolelis M. A. (2017). Pitfalls in the Assessment of Brain-Machine Interfaces Using Information Transfer Rate. *bioRxiv*. 205013.
- Rajangam, S.\*, **Tseng, P. H.\***, Yin, A., Lehew, G., Schwarz, D., Lebedev, M. A., & Nicolelis, M. A. (2016). Wireless cortical brain-machine interface for whole-body navigation in primates. *Scientific Reports*, 6. (*\*co-first author*)
- Pais-Vieira, M., Kunicki, C., **Tseng, P. H.**, Martin, J., Lebedev, M., & Nicolelis, M. A. (2015). Cortical and thalamic contributions to response dynamics across layers of the primary somatosensory cortex during tactile discrimination. *Journal of neurophysiology*, 114(3), 1652-1676.

**Tseng, P. H.**, Paolozza, A., Munoz, D. P., Reynolds, J. N., & Itti, L. (2013, October). Deep learning on natural viewing behaviors to differentiate children with fetal alcohol spectrum disorder. In International Conference on Intelligent Data Engineering and Automated Learning (pp. 178-185). Springer Berlin Heidelberg.

**Tseng, P. H.**, Cameron, I. G., Pari, G., Reynolds, J. N., Munoz, D. P., & Itti, L. (2013). High-throughput classification of clinical populations from natural viewing eye movements. *Journal of neurology*, 260(1), 275-284.

**Tseng, P. H.**, Carmi, R., Cameron, I. G., Munoz, D. P., & Itti, L. (2009). Quantifying center bias of observers in free viewing of dynamic natural scenes. *Journal of vision*, 9(7), 4-4.

**Tseng, P. H.**, Chen, Y. S., Hsieh, J. C., Chen, L. F. (2005) Group analysis of frequency-dependent cortical organization using neuromagnetic signals. Proceedings of the International Conference on Neural Information Processing, Taipei, Taiwan

#### PATENT

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**Tseng, P. H.**, Cameron, I. G., Munoz, D. P., & Itti, L. (2014). U.S. Patent No. 8,808,195. Washington, DC: U.S. Patent and Trademark Office.

#### HONOR

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Hot Topic (2017 Nov), Brain-to-brain synchronization between monkey pairs during whole body navigation. Society for Neuroscience Annual Meeting

Hot Topic (2014 Nov), Wheelchair navigation with wirelessly recorded cortical ensembles. Society for Neuroscience Annual Meeting

Best Poster Award (2003), Agent-based Web Information Integration for SNP Association Study. Symposium of Bioinformatics in Taiwan

#### AD HOC REVIEWER

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IEEE Transactions on Biomedical Engineering

European Journal of Neuroscience

Journal of Electronic Imaging

PLoS One

The Annual BCI Award 2016 (BCI, Brain-Computer Interface)

#### TEACHING EXPERIENCE

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2010 CSCI-561 Foundations of Artificial Intelligence (Dr. Laurent Itti)

#### MENTEES

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Gema Berenice Gudiño Mendoza (2017, identifying goal-relevant states during whole-body BMI navigation)

Shivram Chandramouli (2014-2017, concurrent BMI control of a pair of remote robots)

Pedro Mendes (2017, analyzing brain-to-brain synchronization under various behaviors during share-control)

Nuria Armengol Urpí (2017, neuronal decoder based on long-short term memory recurrent network)

Bastien Orset (2016, sound/word/object representation in motor cortex)

Rik Ubaghs (2016, combing spiking train and local field potential for chronic neural decoder)

Felipe Vitoriano & Fabricio Almeida (2015, interfacing toy robots with Arduino)

Igor Macedo Silva (2015, tracking poses of free-behaving monkeys by Kinect)

Sam Parker (2015, creating virtual reality environment with Unity)

Maria Cervera (2014, running wheelchair experiments and analyzing neural data)

INVITED TALKS

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2012 Apr 10th Annual USC Vision Symposium

2008 May Vision Science Society Annual Meeting

CONFERENCE PRESENTATIONS

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Armengol Urpí, N., **Tseng, P. H.** (2017). Long-short term memory neural decoder for cortical brain-machine interface. Congreso de la Sociedad Española de Ingeniería Biomédica, Bilbao, Spain

**Tseng, P. H.**, Rajangam, S., Lehw, G., Lebedev, M. A., Nicolelis, M. A. (2017 Nov) Brain-to-brain synchronization between monkey pairs during whole body navigation, In: Society for Neuroscience Annual Meeting

**Tseng, P. H.**, Rajangam, S., Yin, A., Lehw, G., Schwarz, D., Lebedev, M. A., Nicolelis, M. A. (2014 Nov) Wheelchair navigation with wirelessly recorded cortical ensembles, In: Proc. Vision Science Society Annual Meeting

**Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2011 May) Effects of development on low-level feature processing during natural viewing of dynamic scenes, In: Proc. Vision Science Society Annual Meeting

**Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2010 Nov) Differentiating patients (ADHD, FASD, Parkinson's Disease) from controls by gazing patterns, In: Society for Neuroscience Annual Meeting

**Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2010 May) Differentiating Patients from Controls by Gazing Patterns, In: Proc. Vision Science Society Annual Meeting

**Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2009 May) Screening Attentional-related Diseases based on Correlation between Saliency and Gaze, In: Proc. Vision Science Society Annual Meeting

**Tseng, P. H.**, Berg D. J., Yoshida, M., Cameron, I. G. M., Boehnke, S. E., Marino, R. A., Ikeda, T., Kato, R., Takaura, K., Itti, L., Isa, T., Munoz, D. P. (2008 Jul) Deployment of visual attention and of the eyes differentiate observer populations, In: Annual Meeting of the Human Frontier Science Program (HFSP), Berlin

**Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2008 Jun) Differentiating Patients from Controls Based on Correlation between Saliency and Gaze, In: Collaborative Research in Computational Neuroscience Annual Meeting, Los Angeles, California

Carmi, R., **Tseng, P. H.**, Cameron, I. G. M., Munoz, D. P., Itti, L. (2007 May) The impact of maturation and aging on mechanisms of attentional selection, In: Proc. Vision Science Society Annual Meeting

**Tseng, P. H.**, Carmi, R., Cameron, I. G. M., Munoz, D. P., Itti, L. (2007 May) The impact of content-independent mechanisms on guiding attention, In: Proc. Vision Science Society Annual Meeting (VSS07), May 2007.

Yuan, H. Y., **Tseng, P. H.**, et al. (2005) SNP prioritization using FASTSNP, International Society for Computational Biology

**Tseng, P. H.**, et al. (2003) Agent-based Web Information Integration for SNP Association Study, Symposium of Bioinformatics in Taiwan