Curriculum Vitae

First Name: Abdol-Hossein

Family Name: Vahabie

Date of Birth: 11th May 1982

Marital Status: Married, one child

Email: h.vahabie@ut.ac.ir , vahabi@ipm.ir , h.vahabie@gmail.com

Phone: +989194211374

Education and positions

2020-Ongoing	**Assistant professor,** School of Electrical and Computer engineering, and Faculty of Psychology, University of Tehran
2015-2020	**Post-Doctoral Research Fellow**, School of Cognitive Sciences, IPM
2009-2015	**PhD**: Cognitive Neuroscience, School of Cognitive Sciences, IPM, GPA: 18.68, dissertations: Effect of temporal context on visual processing
2004-2007	**MSc**: Electrical Engineering, Control Systems, School of ECE, University of Tehran, GPA: 17.19, thesis: Input data shaping for short term load forecasting
2000-2004	**BSc**: Electrical Engineering, Communication Systems, Dept. of EE, Tabriz University, Ranked 3rd with GPA: 15.99

Research Interests

- **Brain Dynamics**
  - using: single cell recording, fMRI, EEG, Computational modeling, and Advanced statistical analysis

- **Neuro-economics, Decision Making and Social Science**
    - using: Behavioral experiments, Game theory, Reinforcement learning
- **Computational Psychiatry and Computational NeuroModulation**

Journal Papers

1. **Vahabie, A. H.,** Dehaqani, M. R. A., Ahmadabadi, M. N., Araabi, B. N., & Esteky, H. (2017). Rapid face adaptation distributes representation in inferior temporal cortex across time and neuronal dimensions, ***Scientific Reports***, 7, 10 May 2017
2. Akbarzadeh-Sherbaf, K., Safari, S., **Vahabie, A. H.** (2020). A Digital Hardware Implementation of Spiking Neural Networks with Binary FORCE Training. ***Neurocomputing***.
3. Masoudnia S., Mersa O., Araabi B. N., **Vahabie A. H.**, Nili Ahmadabadi M. (2019), Diversified MICE: A Deep Ensemble Framework for Learning Diverse Feature Sets in Offline Signature Verification, **Expert Systems with Applications**
4. Akbarzadeh-Sherbaf, K., Abdoli, B., Safari, S., & **Vahabie, A. H.** (2018). A Scalable FPGA Architecture for Randomly Connected Networks of Hodgkin-Huxley Neurons. ***Frontiers in Neuroscience***, *12*.
5. Dehaqani, M. R. A., **Vahabie, A. H.**, Parsa, M., Noudoost, B., & Soltani, A. (2018). Selective Changes in Noise Correlations Contribute to an Enhanced Representation of Saccadic Targets in Prefrontal Neuronal Ensembles. ***Cerebral Cortex***.
6. Madadi-Asl M., **Vahabie A. H.**, Valizadeh A., (2019) Dopaminergic Modulation of Synaptic Plasticity, Its Role in Neuropsychiatric Disorders, and Its Computational Modeling, **Basic and Clinical Neuroscience** , http://bcn.iums.ac.ir/article-1-1062-en.html
7. Dehaqani, M. R. A., **Vahabie, A. H.,** Kiani, R., Ahmadabadi, M. N., Araabi, B. N., & Esteky, H. (2016). Temporal dynamics of visual category representation in the macaque inferior temporal cortex. **Journal of neurophysiology**, jn-00018.
8. Dehaqani, M. R. A., Alizadeh-Zarei, M., **Vahabie, A. H.** & Esteky, H. (2016) Impairment of perceptual closure in autism for VERTEX, but not EDGE, deleted object images, **Journal of Vision,** 16, no. 10 (2016): 1-10.
9. Faranoush, M., Torabi-Nami, M., Mehrvar, A., HedayatiAsl, A. A., Tashvighi, M., Parsa, R. R., Zangooei, R., Alebouyeh, M., Abolghasemi, M. R., **Vahabie, A. H.**, Vossough, P. (2013). Classifying pediatric central nervous system tumors through near optimal feature selection and mutual information: A single center cohort. **Middle East Journal of Cancer,** 4(4), 153-162.

10. Rezaei Yousefi M. M., Salehi Kasmaei B., **Vahabie A. H.**, Lucas C., Araabi B. N. , Input Selection Based on Information Theory for Constructing Predictor Models of Solar and Geomagnetic Activity Indices, **Journal of Solar Physics**, September 2009, Volume 258, Issue 2, pp 297-318
11. Sajedin, A., Menhaj, M. B., **Vahabie, A. H.**, Panzeri, S., & Esteky, H. (2019). Cholinergic Modulation promotes Attentional Modulation in primary Visual cortex-A Modeling Study. **Scientific Reports**, 9(1), 1-18.
12. Tehrani-Safa A. H., Sarabi-Jamab A., Maddah A., **Vahabie A. H.**, Araabi B. N., and Bahrami B., Could the unknown unknown be good or bad news? The role of valence in decision making under ambiguity, published as **pre-print in PsyArXiv**.
13. Yazdani S., **Vahabie A. H.**, Araabi B. N., Nili Ahmadabadi M., Better than maximum likelihood estimation of model-based and model-free learning style, published as **pre-print in bioRxiv**, 296335.
14. Yazdanpanah A., **Vahabie A. H.**, Nili AhmadAbadi M., Do you share your personally useless information if others may benefit from it? , published as **pre-print in PsyArXiv**.
15. Ershadmanesh S., Miandari M., **Vahabie A. H *** , Nili Ahmadabadi M.*, Higher Meta-cognitive Ability Predicts Less Reliance on Over Confident Habitual Learning System, published as **pre-print in bioRxiv**.
16. Karami, B., Koushki, R., Arabgol, F., Rahmani, M., & **Vahabie, A. H.** Effectiveness of Virtual/Augmented Reality-based therapeutic interventions on individuals with autism spectrum disorder: A comprehensive meta-analysis, published as **pre-print in PsyArXiv**
17. Kandroodi, M. R., Cook, J. L., Swart, J. C., Froböse, M. I., Geurts, D. E., **Vahabie, A. H.,** Nili Ahmadabadi M., Cools R., & den Ouden, H. E. Effects of methylphenidate on reversal learning depend on working memory capacity, published as **pre-print in PsyArXiv**
18. Masoudnia, S., Kheirieh, M., **Vahabie, A. H.,** & Nadjar-Araabi, B. (2020). Attention-based Assisted Excitation for Salient Object Segmentation. Published as preprint in **arXiv**:2003.14194.

Refereed Conference Full Papers

1. Jamalabadi H., Nasrollahi H., Nili Ahmadabadi M., Araabi B. N., **Vahabie A. H.**, Abolghasemi M. R., A Dynamic Bio-inspired Model of Categorization. ICONIP (2) 2012, published also as a book chapter in **Neural Information Processing**, pp 160-167

2. Barghinia S., Kamankesh S., Mahdavi N., **Vahabie A. H.**, Gorji A. A., A Combination Method for Short Term Load Forecasting Used in Iran Electricity Market by NeuroFuzzy, Bayesian and Finding Similar Days Methods, **EEM 2008** Conference, May 2008 Lisbon, Portugal
3. **Vahabie A. H.**, Rezaei Yousefi M. M., Araabi B. N., Lucas C., and Barghinia S., Combination of Singular Spectrum Analysis and Autoregressive Model for Short Term Load Forecasting. In Proceeding of **IEEE Power Tech 2007**, Lausanne, Switzerland, July 2007. 137.
4. **Vahabie A. H.**, Rezaei Yousefi M. M., Araabi B. N., Lucas C., Barghinia S., and Ansarimehr P., Mutual Information Based Input Selection in Neuro-Fuzzy Modeling for Short Term Load Forecasting of Iran National Power System. IEEE International Conference on Control and Automation (**ICCA 2007**), Guangzhou, China, May-June, 2007.
5. Rezaei Yousefi M. M., Mirmomeni M., **Vahabie A. H.**, and Lucas C., Near Optimal Feature Selection Using Mutual Information for Classification Problems. International Joint Conference on Knowledge Management for Composite Materials, Nano, and Fuel Cell Technology (**KMCM 2007**), Duesseldorf, Germany, July 2007.
6. **Vahabie A. H.**, Araabi B. N., Lucas C., Ansarimehr P., and Barghinia S., using singular spectrum analysis in identification and correction of load data for short term load forecasting, 21st **PSC 2006** conference, Tehran Iran- in Persian
7. **Vahabie A. H.**, Barghinia S., Vafadar N., and Barahmandpour H., proposing a novel method for short term load forecasting based on the finding of similar days, 22nd **PSC 2007** conference, Tehran, Iran (Best paper of the conference)-in Persian. This paper is also **published in Iranian Energy Journal**, due to selection as **the best paper of the conference**.
8. **Vahabie A. H.**, Barghinia S., Araabi B. N., and Lucas C., using auto-associative neural networks for correction of improper load data for short term load forecasting of electricity market 13th conference of **electric power distribution**. 2008, Guilan, Iran.

Conference Abstracts

1. Karami, B., Koushki, R., Shakerian, F., **Vahabie, A. H.**, Dehaqani, M. R. A. (2017), neural evidence for top-down visual processing. *Basic and clinical neuroscience*. Tehran
2. Masoudnia S., **Vahabie A. H.**, Nili Ahmadabadi M., Araabi B. N., (2017). Attention Modulation Effects on Visual Feature-selectivity of Neurons in Brain-inspired Categorization Models, CogSci, London, England.
3. Masoudnia S., **Vahabie A. H.**, Sadeghi M. A., Nili Ahmadabadi M., Araabi B. N., (2017). Brain-Inspired Approach to Visual Categorization Models, ICCS.

4. Dehaqani, M. R. A., **Vahabie, A. H.**, Noudoost, B., Soltani, A. (2016). Complementary contributions of high-dimensional representation and noise correlation to cognitive processes. Program No. 81.05 / DDD10, SfN. San Diego.
5. Dehaqani, M. R. A., Zarei, M. A., **Vahabie, A. H.**, & Esteky, H. (2016). Selective impairment of perceptual closure in autism. VSS(Vision Sciences Society) Annual Meeting, Florida.
6. Rafipour H., **Vahabie A. H.**, Soltani A., Araabi B. N. (2016). A Biophysically plausible model for meta-learning in reinforcement learning, BCNC
7. Tehrani-Safa A. H., Sarabi-jamab A., **Vahabie A. H.**, Maddah A., Araabi B. N., Bahrami B. (2016), Gender differences in attitude toward uncertainty and ambiguity tolerance, BCNC
8. **Vahabie A. H.**, Dehaqani, M. R**. *A***., Sun C., Noudoost, B, Soltani, A. (2014). Contributions of Frontal Eye Field Spiking Activity and Synchrony to Control of Eye Movements. SfN

Awards and Honors

- **Research Grant** (690 Million Rials) from Cognitive sciences and Technologies Council (**COGC**), for the project of "**Investigation of changes in decision learning using drugs and social factors**" confirmed for 2019-2021
- **Research Grant** (172 million Rials) from Cognitive sciences and Technologies Council (**COGC**), for the project of "**Influence of DopaCell transplantation on neuronal and cognitive outcomes in a primate Parkinson's disease model: Computational and cognitive modeling**" confirmed for 2020-2022
- **Best paper** of electrical engineering conference 2007, Tehran, Iran
- **Best workshop** of electrical engineering conference 2012, Tehran, Iran
- BSc: **Ranked 3rd** among communication-systems, electrical engineering students

Teaching experiences

Courses

- **An introduction to cognitive neuroscience and modeling**, Electrical and Computer engineering department, University of Tehran, graduate course, spring 2018
- **An introduction to cognitive neuroscience and modeling**, Electrical and Computer engineering department, University of Tehran, graduate course, spring 2016

- **Neuroanatomy and neurophysiology**, school of cognitive sciences, IPM, graduate course, Spring 2016
- **Intelligent Systems,** Electrical and Computer engineering department, University of Tehran, graduate course, fall 2018
- **Higher Cognitive Functions,** School of Psychology, University of Tehran, fall 2018
- **Higher Cognitive Functions,** ICSS, fall 2018

Teaching in Workshops

- **Psychophysics,** 2018, National Brain Mapping Lab, Tehran , Iran
- **Neuronal Modeling,** 2018, National Brain Mapping Lab, Tehran , Iran
- **Statistical Inference methods in Cognitive science using R**, 2017, school of cognitive science, IPM, Tehran, Iran
- **Applications of electrical engineering techniques in cognitive neuroscience**, 2012, a workshop at 20th electrical engineering conference, university of Tehran, **selected as the best workshop**
- **Spike sorting and spike train analysis methods**, 2012, IBRO school, Tehran, Iran (IBRO is International Brain Research Organization)
- **Psychophysics,** 2016, IBRO school, Tehran , Iran
- **Spike sorting and spike train analysis methods,** 2016, IBRO school, Tehran , Iran
- **An Introduction to cognitive neuroscience**. 2016, summer school in ISBSC, Zanjan, Iran

Supervisor and Consulting Advisor of theses

Consulting Advisor of PhD theses

1. Mojtaba Rostami Kandroudi, PhD student at ECE, University of Tehran, **on Reversal learning modeling**, ongoing, in collaboration with *Dr M. Nili Ahmadabadi* and *Dr B. Nadjar Araabi*
2. Atena Sajedin, PhD student at EE, Amirkabir university of Technology**, on modeling of cholinergic neuromodulation**, in collaboration with *Dr M. B. Menhaj* and *Dr H. Esteky*, Graduated Feb 2020.
3. Kaveh Akbarzadeh Sherbaf, PhD student at ECE, University of Tehran, **on FPGA implementation of spiking neural networks**, in collaboration with *Dr S. Safari*, Graduated July 2020.

4. Arash Boroumand, PhD student at ECE, University of Tehran, **information theoretic accounts of learning,** ongoing, in collaboration with *Dr A. M. Rabiei*
5. Sara Ershadmanesh, PhD student at SCS, IPM, **on the link of metacognition and habitual and goal-directed learning,** in collaboration with *Dr M. Nili Ahmadabadi, Graduated June 2020.*
6. Zahra Barakchian, PhD student at SCS, IPM, **on contextual effects in reinforcement learning,** ongoing, in collaboration with *Dr M. Nili Ahmadabadi*.
7. Kian Norouzi, PhD student at Department of Marketing, School of Management, University of Tehran, **on cognitive effects of uncertain promotion and discount,** ongoing in collaboration with *Dr M. R. Esfidani and T. Ramsoy*

Co-Supervisor of MSc theses

8. Aryan YazdanPanah, MSc student at ECE of University of Tehran, **on information sharing attitude,** 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi*, Graduated Sep 2017
9. Zahra Dokhaei, MSc student at IRCSS, **on effects of emotion on causal attribution**, 1st supervisor in collaboration with *Dr A. Jahani Tabesh*, Graduated March 2017
10. Yasaman Razeghi, MSc student at ECE of University of Tehran, **on planning after blocking some paths**, 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi,* Graduated Sep 2018
11. Mohamadreza Haji Hosseinkhani, MSc student at ECE of University of Tehran, **on observational learning in habitual and goal-directed behavior**, 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi*, Graduated Sep 2018
12. Narges RanginKaman, MSc student at IRCSS, **effects of emotions on implicit learning,** 2nd supervisor in collaboration with Dr A. Jahani Tabesh, Graduated March 2018
13. Mahdieh Soltaninejad, MSc student at ECE of University of Tehran, **on the role of functional attributes in generalization,** 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi,* Graduated Sep 2019
14. Hadis Jamei, MSc student at ECE of University of Tehran, on the social contagion in rsky decision making, 2nd supervisor in collaboration with *Dr B. Nadjar Araabi,* **Graduated July 2019**
15. Morteza Hajilu, MSc student at Psychology department of University of Tehran, **on the role of value in retro-cue paradigm of working memory,** 2nd supervisor in collaboration with Dr A. Jahani Tabesh, Graduated August 2019
16. Mojtaba AmirKhani, MSc student at ECE, University of Tehran, **on the effects of cognitive games in rehabilitation,** in collaboration with *Dr H. Moradi, Graduated Feb 2020*

17. Saeedeh Madanipour, MSc student at ECE of University of Tehran, **on the role of emotion in habitual and goal-directed behavior**, ongoing, 2nd supervisor in collaboration with *Dr B. Nadjar Araabi*
18. *Behzad Mehrtash*, MSc student at ECE of University of Tehran, **on the sequential decision making,** ongoing, 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi*
19. *Moein Kafi*, MSc student at ECE of University of Tehran, **on the role of fatigue in decision making**, ongoing, 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi*
20. *Ali Shiravand*, MSc student at ECE of University of Tehran, **on the behavioral change in passengers of internet taxies,** ongoing, 2nd supervisor in collaboration with *Dr M. Nili Ahmadabadi*

Consulting Advisor of MSc theses

21. Shakiba Moradi, MSc student at EE of Sharif University of Technology, **on the modeling of adaptation effects in oscillatory behavior of network**, in collaboration with *Dr M. Jahed*, Graduated Jan 2017
22. Behnam Karami, MD student at SBMU, **on a meta-analysis on the effectiveness of virtual reality in autism,** in collaboration with Dr F. Arabgol, Graduated Oct. 2018
23. Roxana Kushki, MD student at SBMU, **on a meta-analysis on the effectiveness of virtual reality in ADHD**, in collaboration with Dr F. Arabgol, Graduated Oct. 2018

Talks in Seminars

- **Social Contagion**, in SBU One-Day Symposium on Social Cognition, Shahid Beheshti University, December 2019
- **Learning from others**, Basic and Clinical Neuroscience Congress (BCNC), December 2019
- **Computational modeling of neuromodulatory systems**, Basic and Clinical Neuroscience Congress (BCNC), December 2019

- **Damasio and Descarte's error**, in one day workshop: Emotions: Philosophical and Neuropsychological Perspectives, SCS, IPM, June 2019
- **Information Sharing and Social Preference**, 1st international Sharif neuroscience Symposium, March 2019
- **Rapid face adaptation distributes the representation in inferior-temporal cortex across time and neuronal dimensions**, 2018, International symposium on theoretical and computational neuroscience, University of Tehran, Tehran, Iran
- **Neuroeconomics**, 2016,in the symposium of an introduction to behavioral economics, Sharif University of Technology, Tehran, Iran
- **Decision making and psychiatric disorders,** 2016, Basic and clinical neuroscience congress, Tehran, Iran
- **Methods and approaches in computational psychiatry: potentials in Iran**, 2016, 33rd annual congress of Iranian psychiatric association, Tehran, Iran
- **How decision is made in brain?** 2016, The Second Interdisciplinary Seminar on Brain and Cognition, Shiraz, Iran
- **Finding Value lands in the brain**, 2013, IPM, Tehran , Iran
- **Correlation between the activity of sensory neurons and behavior: Is it a matter of causality?,** 2012, IPM, Tehran , Iran
- **Decision making in recurrent neuronal circuits**, 2012, IPM, Tehran , Iran
- **Basics of object recognition and bag of word models**, 2011, , IPM, Tehran , Iran
- **Synchrony: A neural correlate of somatosensory attention**,2010, IPM, Tehran , Iran

Participated in Schools and courses

- **Winter School on Quantitative Systems Biology: Learning and Artificial Intelligence**, two weeks winter school, November 2018, **ICTP**, Trieste, Italy
- **4th computational and cognitive neuroscience summer school,** Three week summer school with the funding of **Cold Spring Harbor Asia**, June 2013, Beijing, China
- **Faculty Development Program,** Four day workshop, UNESCO chair on engineering education, university of Tehran, June 2018, Tehran Iran
- **Workshop on fMRI data analysis,** Jan 2016, IPM, Tehran, Iran
- **2nd workshop on soft data mining,** Feb 2012, Kharazmi university, Tehran, Iran
- **Workshop on NeuroStereology,** May 2016, Shahid Beheshti university of medical science, Tehran, Iran

- **4th Computational neuroscience workshop,** Aug 2014, IASBS, Zanjan, Iran
- **1st seminar on exploring the cognitive science,** Dec 2009, AmirKabir university of technology, Tehran, Iran
- **Workshop on Multiple channel recording technique in non-human primates,** Iranian Physiology and pharmacology congress, Oct 2009, Tehran, Iran
- **Decisions and Actions**, Dr Reza Shadmehr, Nov 2015, IPM, Tehran, Iran
- **The cognitive neuroscience of attempting to influence others,** Dr Bahador Bahrami, July 2016, IPM, Tehran, Iran

Book

- Scientific edition of the translation of "**Computational neuroscience and cognitive modelling: a student's introduction to methods and procedures**", By Britt Anderson

Graduate courses

During PhD: Cognitive Neuroscience, Excitable membrane, Machine vision, Machine learning, Distributed AI, Spike train analysis, Vision psychophysics, Synaptic plasticity, Vision, An introduction to computational modeling, Vision and attention, MRI,

During MSc: Stochastic processes, Fuzzy logic, Bio-inspired computing, Multi-variate control, Digital control, Advanced industrial control, Pattern recognition, Nonlinear control, Optimal control,

Organizing and Reading Groups

- **Organizing a bi-weekly Journal Club on decision making and social science,** in collaboration with Dr. Bahador Bahrami (UCL) at IPM, 2015-2020, Tehran, Iran
- **Organizing Weekly Seminars of school of cognitive sciences, IPM,** 2017-2019
- **Book reading group for reading: "Neuroeconomics, Decision making and the Brain, P. Glimcher, 2nd ed. 2014",** in collaboration with Dr. Zendehrouh and Dr. Sarabi, 2015-2016, at IPM
- **Organizing the IPM part of Tehran IBRO school,** 2016, Tehran Iran
- **Book reading group for reading: "Principles of neural sciences, E. Kandel",** 2009-2011, Tehran, Iran

- Consultation to **Khandevaneh TV show**, in behalf of Cognitive science and Technologies Council, 2016-2017

Research projects

- Collaboration in Reduction of electricity consumption at peak hours using cognitive methods in social networks, University of Tehran, 2018.
- Dynamics of information representation in neuronal networks and decision making, IPM, 2015-continued
- Network dynamics and controllability in neural activity in developmental disorders, IPM, 2016-2018
- Short-Term Load Forecasting of Iran National Power System. In Niroo research Institute, 2006-2008
- Collaborations in Setup of single cell recording system for recording of Barrel cortex of rat, with colleagues and also co-operation in 3 surgeries of monkey for head post installation and craniotomy and some assistance during recording sessions

Software skills

- Programming skills in Matlab, Python, R, WINBUGS, Labview
- Professional Working Experiences with Adobe illustrator, MS-Office,

Work experiences

- Pars Arc (Partner of Siemens in BMS in Iran) 2007 (in the field of Building Automation System).
- Robotics and Artificial Intelligence and Information Science Institute(RAISE) 2007 (about Short Term Load Forecasting)
- Niroo Research Institute(NRI) 2005-2007 (about Short Term Load Forecasting)
- Petrochemical industrial site in Tabriz 2003 (at Automation Control)

Languages

- **Farsi (Persian):** Native
- **Turkish:** Native (Azari and Istanbuli)

- **English**: Fluent (**PBT TOEFL Score: 617**)
- **Arabic:** Good