

Maryam M. Shanechi

Associate Professor and Viterbi Early Career Chair
Ming Hsieh Department of Electrical and Computer Engineering
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EDUCATION

- MIT, Electrical Engineering & Computer Science, Ph.D., June 2011
- MIT, Electrical Engineering & Computer Science, S.M., June 2006
- University of Toronto, Engineering Science, B.A.Sc., June 2004

ACADEMIC APPOINTMENTS

Associate Professor and Viterbi Early Career Chair Ming Hsieh Department of Electrical and Computer Engineering Neuroscience Graduate Program Department of Biomedical Engineering (courtesy) University of Southern California (USC)	03/2021–present
Assistant Professor and Viterbi Early Career Chair Ming Hsieh Department of Electrical and Computer Engineering Neuroscience Graduate Program Department of Biomedical Engineering (courtesy) University of Southern California (USC)	07/2014–03/2021
Assistant Professor Department of Electrical and Computer Engineering Cornell University	01/2014–07/2014
Visiting and Postdoctoral Scholar (concurrent with Cornell Visiting Assistant Professor) Helen Wills Neuroscience Institute and Department of Electrical Engineering & Computer Sciences UC Berkeley	10/2012–12/2013
Visiting Assistant Professor Department of Electrical and Computer Engineering Cornell University	10/2012–12/2013
Postdoctoral Scholar Harvard Medical School	07/2011–10/2012

INDUSTRY POSITIONS

- Summer Intern, NextWave Wireless, San Diego, CA 06/2008–09/2008
- Research Intern, HP Labs, Palo Alto, CA, 01/2008–02/2008
- Summer Intern, NextWave Wireless, San Diego, CA 06/2007–09/2007
- Summer Intern, Vanu Inc., Cambridge, MA, 06/2006–09/2006
- Summer Intern, Vanu Inc., Cambridge, MA, 06/2005–09/2005
- Summer Intern, Altera Corp., Toronto, ON, 06/2004–09/2004

HONORS AND AWARDS

- American Society for Engineering Education Curtis W. McGraw Research Award (awarded to one early-career faculty in the US PhD-granting institutions annually), 2021
- NIH Director's New Innovator Award (DP2), 2020
- *Science News*' 2019 SN 10: 10 Scientists to Watch, 2019
- Office of Naval Research (ONR) Young Investigator Award, 2019
- NIMH Director's Innovation Speaker, 2019
- A winner of the annual international BCI Award, 2019
- USC Viterbi Junior Faculty Research Award, 2019
- University of Toronto Engineering Alumni Network's Mid-Career Achievement Award, 2019
- DoD BARI award for US-UK collaboration, 2018
- IEEE senior member, 2018
- National Academy of Sciences (NAS), Kavli Frontiers of Science Symposium – Invited Session Chair and Speaker, 2018
- National Academy of Engineering (NAE), US Frontiers of Engineering Symposium – Invited Committee Member and Session Co-Chair, 2017
- Joint US-UK DoD Multidisciplinary University Research Initiative (MURI) award, 2016
- Popular Science Brilliant 10, 2015
- IEEE EMBC paper award, 2015
- National Academy of Engineering (NAE) selection for the US Frontiers of Engineering Symposium, 2015
- Cal-BRAIN Inaugural Award, 2015
- NSF CAREER Award, 2015
- Viterbi Early Career Chair, 2015
- MIT Technology Review TR35 – the world's 35 top innovators under 35, 2014
- Research selected by Google's Solve for X as a Technology Moonshot, 2014
- Best Paper Award in Technology, Computing, and Simulation, International Anesthesia Research Society (IARS), 2014
- National Canadian Doctoral Fellowship (NSERC), 2006-2009
- Next Generation Canadian Leader selected by the University of Toronto Magazine, 2004
- Gold Medal, Professional Engineers of Ontario (first rank among all engineering graduates at the University of Toronto), 2004
- W. S. Wilson Medal, first rank in Engineering Science at the University of Toronto, 2004
- National Canadian Undergraduate Research Fellowship (NSERC), 2003
- National Canadian Undergraduate Research Fellowship (NSERC), 2002

RESEARCH GRANTS

Total research funding as PI plus shares as Co-PI: \$27.4M

Total direct funding to my lab: \$12.7M

- G1. **PI**, DoD MURI, \$11.25M (\$6.25M US + \$5M UK) 08/23/2016–11/23/2023
“Closed-loop multisensory brain-computer interface for enhanced decision accuracy”
- This is a multi-institutional international grant led by PI Shanechi. Direct funds to my lab: \$2.07M
- G2. **PI**, DoD BARI, \$5M (\$3M US + £1.5M UK) 09/06/2018–09/05/2022
“Adaptive joint cognitive systems for complex and strategic decision making”
- This is a multi-institutional international grant led in the US by PI Shanechi. Direct funds to my lab: \$1.33M
- G3. **PI**, NIH R01, \$3M 04/01/2021–03/31/2026
“Model-based neural control of brain stimulation for neuropsychiatric disorders”
- Direct funds to my lab: \$2M
- G4. **PI**, NIH Director’s New Innovator Award – DP2, \$2.475M 09/01/2020–05/31/2025
“A novel geometric paradigm for nonlinear modeling and control of neural dynamics”
- G5. **PI**, NSF CRCNS, \$1M 10/01/2021–09/30/2024
“Modeling neural dynamics of naturalistic movements across contexts”
- Direct funds to my lab: \$600K
- G6. **PI**, ONR Young Investigator Award – YIP, \$750K 03/01/2019–02/28/2022
“Uncovering multiscale neural network dynamics underlying reach-to-grasp movements”
- G7. **PI**, NSF CAREER, \$503K 02/15/2015–01/31/2022
“Generalizable, robust, and closed-loop brain-machine interface control architectures”
- G8. **PI**, ARO DURIP (equipment grant), \$234K 04/15/2017–04/14/2019
“High-density electroencephalogram recording system”
- G9. **PI**, Cal-BRAIN, \$120K 06/01/2015–11/30/2016
“Control-theoretic brain-machine interface design using electrocorticography signals”
- G10. **Co-I**, NIH R01, my share: \$1.18M 09/25/2017–08/31/2022
“Predictive models of brain dynamics during decision making and their validation using distributed optogenetic stimulation”
- G11. **Co-PI**, DARPA, my share: \$1.13M 06/01/2014–05/31/2019
“Unlearning systems dysfunction in neuropsychiatric disorders”
- G12. **Co-I**, NIH UH3, my share: \$527K 07/01/2019-06/31/2024
“Technology development for closed-loop deep brain stimulation to treat refractory neuropathic pain”
- G13. **Co-I**, NIH UH3, my share: \$318K 09/01/2016–08/31/2022
“Closed loop deep brain stimulation for Parkinson’s disease”

PUBLICATIONS

- advisee names are underlined.
- †denotes corresponding author.
- *denotes equal contribution.
- senior lead author is the last author, as common in neural engineering/neuroscience.

Book & Book Chapters

- B1. Aarabi P., Shi G., **Shanechi M. M.**, Rabi S., “Phase-based speech processing”, World Scientific, 2005.
- B2. **Shanechi M. M.**†, Hu R., Powers M., Wornell G. W., Brown E. N., Williams Z. M., “A concurrent brain-machine interface for enhanced sequential motor function”, *Brain-Computer Interface Research*, Ed. C. Guger, Ed. T. Vaughan, Ed. A. Brendan, Springer International Publishing, 97–112, Jan. 2014.
- B3. **Shanechi M. M.**†, “Brain-machine interfaces”, *Dynamic Neuroscience*, Ed. S. Sarma, Ed. Z. Chen, Springer International Publishing, 2018.
- B4. Yang Y., Sani O. G., Lee M. B., Dawes H. E., Chang E. F., **Shanechi M. M.**†, “Developing a Closed-Loop Brain-Computer Interface for Treatment of Neuropsychiatric Disorders Using Electrical Brain Stimulation”, *Brain-Computer Interface Research: A State-of-the-Art Summary*, Springer International Publishing (2021)
- B5. Sani O. G., Yang Y., **Shanechi M. M.**†, “Brain-machine interfaces for closed-loop electrical brain stimulation in neuropsychiatric disorders”, *Handbook of Neuroengineering*, Ed. N. Thakor, Springer International Publishing (2021).

Peer-Reviewed Journal Papers

- J1. Yang Y.*, Qiao S. *, Sani O. G., Sedillo I. J., Ferrentino B., Pesaran B., **Shanechi M. M.**†, “Modelling and prediction of the dynamic responses of large-scale brain networks during direct electrical stimulation”. *Nature Biomedical Engineering*, 5: 324–345, Feb. 2021.
 - [Journal Cover Article](#)
 - [News and Views by Julio Chapeton & Kareem Zaghloul, Nature Biomedical Engineering, 5: 293–294, Apr. 2021.](#)
- J2. Abbaspourazad H., Choudhary M., Wong Y.T., Pesaran B., **Shanechi M. M.**†, “Multiscale low-dimensional motor cortical state dynamics predict naturalistic reach-and-grasp behavior”. *Nature Communications* 12: 607, Jan. 2021.
- J3. Sani O. G., Abbaspourazad H., Wong Y.T., Pesaran B., **Shanechi M. M.**†, “Modeling behaviorally relevant neural dynamics enabled by preferential subspace identification”, *Nature Neuroscience*, 24: 140–149, Jan. 2021.
- J4. Yang Y.*, Ahmadipour P.*, **Shanechi M. M.**†, “Adaptive latent state modeling of brain network dynamics with real-time learning rate optimization” *Journal of Neural Engineering*, 18 (3): 036013, Nov. 2020.

- J5. Ahmadipour P. *, Yang Y. *, Chang E. F., **Shanechi M. M.†**, “Adaptive tracking of human ECoG network dynamics”. *Journal of Neural Engineering*, 18 (1): 016011, Aug. 2020.
- J6. **Shanechi M. M.†**, “Brain-machine interfaces from motor to mood”, *Nature Neuroscience*, 22 (10): 1554–1564, Oct. 2019.
- J7. Sadras N., Pesaran B., **Shanechi M. M.†**, “A point-process matched filter for event detection and decoding from population spike trains”, *Journal of Neural Engineering*, 16 (6): 066016, Oct. 2019.
- J8. Bighamian R., Wong Y., Pesaran B., **Shanechi M. M.†**, “Sparse model-based estimation of functional dependence in high-dimensional field and spike multiscale networks”, *Journal of Neural Engineering*, 16 (5): 056022, Sep. 2019.
- J9. Yang Y. *, Sani O. G. *, Chang E. F., **Shanechi M. M.†**, “Dynamic network modeling and dimensionality reduction for human ECoG activity” *Journal of Neural Engineering*, 16 (5): 056014, Aug. 2019.
- J10. Abbaspourazad H., Hsieh H., **Shanechi M. M.†**, “A multiscale dynamical modeling and identification framework for spike-field activity”, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 27 (6): 1128–1138, Jun. 2019.
- J11. Wang C., **Shanechi M. M.†**, “Estimating multiscale direct causality graphs in neural spike-field networks”, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 27 (5): 857–866, May 2019.
- J12. Yang Y., Guidera J., Vlasov K., Pei J., Brown E.N., Solt K., **Shanechi M. M.†**, “Developing a personalized closed-loop controller of medically-induced coma in a rodent model” *Journal of Neural Engineering*, 16 (3): 036022, Apr. 2019.
- J13. Rao, V. R. *, Sellers K. K. *, Wallace D. L., Lee M. B., Bijanzadeh M., Sani O.G., Yang Y., Jordan K. M., Bederson L. B., Goldberg-Boltz N., Henry R. G., **Shanechi M. M.**, Dawes H. E., Chang E. F., “Direct electrical stimulation of lateral orbitofrontal cortex acutely improves mood in patients with symptoms of depression”, *Current Biology*, 28 (24): 3893–3902.e4, Dec. 2018.
- *Selected Media Highlights: National Public Radio (NPR), Science News, Futurism.*
- J14. Hsieh H., Wong Y.T., Pesaran B., **Shanechi M. M.†**, “Multiscale modeling and decoding algorithms for spike-field activity”, *Journal of Neural Engineering*, 16 (1): 016018, Dec. 2018.
- J15. Sani O. G. *, Yang Y. *, Lee M., Dawes H. E., Chang E. F.†, **Shanechi M. M.†**, “Mood variations decoded from multisite intracranial human brain activity”, *Nature Biotechnology*, 36 (10): 954–961, Oct. 2018.
- *Journal Cover Article*
- *Selected Media Highlights: The Wall Street Journal, New Scientist, Science News, New Atlas, IEEE Spectrum*
- *News and Views by Amit Etkin, Nature Biotechnology 36 (10):932–933, Oct. 2018*

- J16. Yang Y., Connolly A., Shanechi M. M.[†], “A control-theoretic system-identification framework and a real-time closed-loop clinical simulation testbed for electrical brain stimulation”, *Journal of Neural Engineering* 15 (6): 066007, Sep. 2018.
- *Selected Media Highlights: Science News, IEEE Spectrum*
- J17. Hsieh H., Shanechi M. M.[†], “Optimizing the learning rate for adaptive estimation of neural encoding models”, *PLoS Computational Biology*, 14(5): e1006168, May 2018.
- J18. Shanechi M. M.[†], “Brain-machine interface control algorithms”, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 25 (10): 1725–1734, Oct. 2017.
- J19. Shanechi M. M.^{*†}, Orsborn A. L.J.^{*}, Moorman H.^{*}, Gowda S.^{*}, Dangi S., Carmena J. M.[†], “Rapid control and feedback rates enhance neuroprosthetic control”, *Nature Communications*, 8:13825, Jan. 2017.
- J20. Yang Y., Shanechi M. M.[†], “An adaptive and generalizable closed-loop system for control of medically-induced coma and other states of anesthesia”, *Journal of Neural Engineering*, 13 (6):066019, Nov. 2016.
- J21. Shanechi M. M.^{*†}, Orsborn A. L.^{*}, Carmena J. M.[†], “Robust brain-machine interface design using optimal feedback control modeling and adaptive point process filtering”, *PLoS Computational Biology*, 12 (4):e1004730, Apr. 2016.
- [Faculty of 1000 Recommended](#)
- J22. Shanechi M. M., Hu R., Williams Z. M., “A cortical-spinal prosthesis for targeted limb movement in paralyzed primate avatars”, *Nature Communications*, 5:3237, Feb. 2014.
- *Selected Media Highlights: Cornell Chronicle, BBC, Le Monde, Discovery News, Le Scienze*
- J23. Orsborn A. L., Moorman H. G., Overduin S. A., Shanechi M. M., Dimitrov D. F., Carmena J. M., “Closed-loop decoder adaptation shapes neural plasticity for skillful neuroprosthetic control”, *Neuron*, 82 (6): 1380–1393, Jun. 2014.
- J24. Dangi S., Gowda S., Moorman H. G., Orsborn A. L., So K., Shanechi M. M., Carmena J. M., “Continuous closed-loop decoder adaptation with a recursive maximum likelihood algorithm allows for rapid performance acquisition in brain-machine interfaces” *Neural Computation*, 26 (9): 1811–1839, Sep. 2014.
- J25. Shanechi M. M.^{*†}, Chemali J.^{*}, Liberman M., Solt K., Brown E. N.[†], “A brain-machine interface for control of medically-induced coma”, *PLoS Computational Biology* 9 (10): e1003284, Oct. 2013.
- *Selected Media Highlights: Cornell Chronicle, MIT News, MIT Technology Review, NBC News*
- [Best of category award at IARS meeting 2014](#)
- J26. Shanechi M. M.[†], Williams Z. M., Wornell G. W., Hu R., Powers M., Brown E. N., “A real-time brain-machine interface combining motor target and trajectory intent using an optimal feedback-control design”, *PLoS ONE*, 8 (4):e59049, Apr. 2013.

- J27. **Shanechi M. M.**, Wornell G. W., Williams Z. M., Brown E. N., “Feedback-controlled parallel point process filter for estimation of goal-directed movements from neural signals”, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 21 (1): 129–140, Jan. 2013.
- J28. **Shanechi M. M.**, Hu R., Powers M., Wornell G. W., Brown E. N., Williams Z. M., “Neural population partitioning and a concurrent brain-machine interface for sequential motor function”, *Nature Neuroscience*, 15 (12): 1715–1722, Dec. 2012.
- [Selected Media Highlights: Nature, Discovery News, MIT EECS news](#)
- [Top ten BMI work worldwide selected by the annual international BCI award 2013](#)
- J29. **Shanechi M. M.**, Porat R., Erez U., “Comparison of practical feedback algorithms for multiuser MIMO”, *IEEE Transactions on Communications*, 58 (8): 2436–2446, Aug. 2010.
- J30. Shi G., **Shanechi M. M.**, Aarabi P., “On the importance of phase in human speech recognition”, *IEEE Trans. Audio, Speech and Language Processing*, 14 (5): 1867–1874, Sep. 2006.
- J31. Mavandadi S., Aarabi P., Mohajer K., **Shanechi M. M.**, “Post recognition speech localization”, *International Journal of Speech Technology*, 8 (2): 173–180, Jun. 2005.

Peer-Reviewed Conference Papers and Proceedings

- C1. Hsieh H., Abbaspourazad H., Pesaran B., **Shanechi M. M.**[†], “A nonlinear geometric dynamical modeling framework for neural population activity”, *Computational and Systems Neuroscience (COSYNE)*, Feb. 23–26, 2021 (virtual).
- C2. Abbaspourazad H., Choudhary M., Wong Y. T., Pesaran B., **Shanechi M. M.**[†], “Multiscale low-dimensional neural dynamics explain naturalistic 3D movements”, *Computational and Systems Neuroscience (COSYNE)*, Feb. 27–Mar. 1, 2020, Denver, CO.
- C3. Yang Y., Qiao S., Sani O., Sedillo I., Ferrentino B., Pesaran B., **Shanechi M. M.**[†], “Modeling large-scale brain network dynamics in response to electrical stimulation”, *Computational and Systems Neuroscience (COSYNE)*, Feb. 27–Mar. 1, 2020, Denver, CO.
- C4. Sani O., Pesaran B., **Shanechi M. M.**[†], “Modeling behaviorally relevant neural dynamics with a novel preferential subspace identification (PSID)”, *Computational and Systems Neuroscience (COSYNE)*, Feb. 27–Mar. 1, 2020, Denver, CO.
- C5. Song C., Hsieh H., **Shanechi M. M.**[†], “Decoder for switching state-space models with spike-field observations”, *International IEEE EMBS Conference On Neural Engineering (NER)*, pp. 199–202, 20–23 Mar. 2019, San Francisco, CA.
- C6. Ahmadipour P., Yang Y., **Shanechi M. M.**[†], “Investigating the effect of forgetting factor on tracking non-stationary neural dynamics”, *International IEEE EMBS Conference On Neural Engineering (NER)*, pp. 291–294, 20–23 Mar. 2019, San Francisco, CA.

- C7. Bighamian R., **Shanechi M. M.**[†], “Estimation of functional dependence in high-dimensional spike-field activity”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 2635–2638, 17–21 Jul. 2018, Honolulu, HI.
- C8. Sadras N., **Shanechi M. M.**[†], “Decoding spike trains from neurons with spatio-temporal receptive fields”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 2012–2015, 17–21 Jul. 2018, Honolulu, HI.
- C9. Wang C., **Shanechi M. M.**[†], “An information-theoretic measure of multiscale causality for spike-field activity”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 2631–2634, 17–21 Jul. 2018, Honolulu, HI.
- C10. Abbaspourazad H., Wong Y. T., Pesaran B., **Shanechi M. M.**[†], “Identifying multiscale hidden states to decode behavior”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 3778–3781, 17–21 Jul. 2018, Honolulu, HI.
- C11. Hsieh, H., Wong Y.T., Pesaran B., **Shanechi M. M.**[†], “Multiscale modeling and decoding of spike-field activity during a naturalistic reach-to-grasp task”, *Computational and Systems Neuroscience (COSYNE)*, 1–4 Mar. 2018, Denver, CO.
- C12. Sani O., Yang Y., Lee M., Dawes H., Chang E. F[†], **Shanechi M. M.**[†], “Decoding mood state from multisite ECoG activity in human subjects”, *Computational and Systems Neuroscience (COSYNE)*, 1–4 Mar. 2018, Denver, CO.
- C13. Yang Y., Sani O. G., Sellers K. K., Chang E. F., **Shanechi M. M.**[†], “A novel framework for dynamic modeling of brain-network response to electrical stimulation”, *Computational and Systems Neuroscience (COSYNE)*, 1–4 Mar. 2018, Denver, CO.
- C14. Yang Y., Chang E.F., **Shanechi M. M.**[†], “Dynamic tracking of non-stationarity in human ECoG activity”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1660–1663, 11–15 Jul. 2017, Jeju Island, Korea.
- C15. Hsieh H., Wong Y.T., Pesaran B., **Shanechi M. M.**[†], “Multiscale decoding for reliable brain-machine interface performance over time”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 197–200, 11–15 Jul. 2017, Jeju Island, Korea.
- C16. Abbaspourazad H., **Shanechi M. M.**[†], “An unsupervised learning algorithm for multiscale neural activity”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 201–204, 11–15 Jul. 2017, Jeju Island, Korea.
- C17. Abbaspourazad H., Hsieh H., **Shanechi M. M.**[†], “Multiscale modeling of dependencies between spikes and fields”, *Asilomar Conference on Signals, Systems, and Computers*, pp. 719–723, 29–31 Oct. 2017, Pacific Grove, CA.
- C18. Yang Y., **Shanechi M. M.**[†], “Generalized binary noise stimulation enables time-efficient identification of input-output brain network dynamics”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1766–1769, 16–20 Aug. 2016, Orlando, FL.

- C19. Hsieh H., **Shanechi M. M.**[†], “Multiscale brain-machine interface decoders”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 6361–6364, 16–20 Aug. 2016, Orlando, FL.
- C20. Yang Y., **Shanechi M. M.**[†], “A framework for identification of brain network dynamics using a novel binary noise modulated electrical stimulation pattern”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 2087–2090, 25–29 Aug. 2015, Milan, Italy.
- [Student paper award](#)
- C21. Hsieh H., **Shanechi M. M.**[†], “Optimal calibration of the learning rate in closed-loop adaptive brain-machine interfaces”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1667–1670, 25–29 Aug. 2015, Milan, Italy.
- C22. Yang Y., **Shanechi M. M.**[†], “A generalizable adaptive brain-machine interface architecture for closed-loop control of anesthesia”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1099–1102, 25–29 Aug. 2015, Milan, Italy.
- C23. Yang Y., **Shanechi M. M.**[†], “An adaptive brain-machine interface algorithm for control of burst suppression in medical coma”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1638–1641, 26–30 Aug. 2014, Chicago, IL.
- C24. **Shanechi M. M.**, Orsborn A. L., Moorman H., Gowda S., Carmena J. M., “High-performance brain-machine interface enabled by an adaptive optimal feedback-controlled point process decoder”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 6493–6496, 26–30 Aug. 2014, Chicago, IL.
- [Top ten BMI work worldwide selected by the annual international BCI award 2014](#)
- C25. Chang Y.H., Chen M., **Shanechi M. M.**, Carmena J. M., Tomlin C., “A Design of neural decoder by reducing discrepancy between manual control (MC) and brain control (BC)”, *European Control Conference (ECC)*, pp. 516–521, 25–27 Jun 2014, Strasbourg, France.
- C26. **Shanechi M. M.**^{*}, Orsborn A.^{*}, Gowda S., Carmena J. M., “Proficient BMI control enabled by closed-loop adaptation of an optimal feedback-controlled point process decoder”, *Translational and Computational Motor Control Meeting (TCMC)*, 8 Nov. 2013, San Diego, CA.
- C27. **Shanechi M. M.**, Carmena J. M., “Optimal feedback-controlled point process decoder for adaptation and assisted training in brain-machine interfaces”, *IEEE International EMBS Conference on Neural Engineering (NER)*, pp. 653–656, 6–8 Nov. 2013, San Diego, CA.
- C28. **Shanechi M. M.**, Chemali J., Liberman M., Solt K., Brown E. N., “A brain-machine interface for control of burst suppression in medical coma”, *IEEE International Engineering in Medicine and Biology Society Conference (EMBC)*, pp. 1575–1578, 3–7 Jul. 2013, Osaka, Japan.

- C29. **Shanechi M. M.**, Chemali J., Liberman M., Solt K., Brown E. N., “A brain-machine interface for control of medically-induced coma”, *Computational and Systems Neuroscience (COSYNE)*, 28 Feb. – 3 Mar. 2013, Salt Lake City, UT.
- C30. **Shanechi M. M.**, Hu R., Powers M., Wornell G. W., Brown E. N., Williams Z. M., “A concurrent brain-machine interface for enhanced motor function”, *Computational and Systems Neuroscience (COSYNE)*, 23–26 Feb. 2012, Salt Lake City, UT.
- C31. **Shanechi M. M.**, Williams Z. M., Wornell G. W., Brown E. N., “A brain-machine interface combining target and trajectory information using optimal feedback control”, *Computational and Systems Neuroscience (COSYNE)*, 24–27 Feb. 2011, Salt Lake City, UT.
- C32. **Shanechi M. M.**, Wornell G. W., Williams Z. M., Brown E. N., “A parallel point-process filter for estimation of goal-directed movements from neural signals”, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 521–524, 14–19 Mar. 2010, Dallas, TX.
- C33. **Shanechi M. M.**, Porat R., Erez U., “Comparison of practical feedback algorithms for multiuser MIMO”, *IEEE Vehicular Technology Conference (VTC)*, 26–29 Apr. 2009, Barcelona, Spain.
- C34. **Shanechi M. M.**, Erez U., Wornell G. W., “Rateless codes for MIMO channels”, *IEEE Global Communications Conference (GLOBECOM)*, 1– 4 Dec. 2008, New Orleans, LA.
- C35. **Shanechi M. M.**, Erez U., Wornell G. W., “Time-invariant rateless codes for MIMO channels”, *IEEE International Symposium on Information Theory (ISIT)*, pp. 2247–2251, 6–11 Jul. 2008, Toronto, ON.
- C36. **Shanechi M. M.**, Erez U., Wornell G. W., “Universal coding for parallel Gaussian channels”, *IEEE International Zurich Seminar on Communications (ETH)*, pp. 94–97, 12–14 Mar. 2008, Zurich, Switzerland.
- C37. **Shanechi M. M.**, Aarabi P., “Structural analysis of multisensor arrays for speech separation applications”, *Sensor Fusion: Architectures, Algorithms, and Applications VII*, Apr. 2003, Orlando, FL.

Conference Abstracts and Presentations

- A1. Ahmadipour P., Sani O. G., Yang Y., Shanechi M. M.[†], “Efficient learning of low dimensional latent dynamics in multiscale spiking and field potential population activity”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).
- A2. Oganesian L. L., Sani O. G., Shanechi M. M.[†], “Learning behaviorally relevant dynamics in population spiking activity with Poisson preferential subspace identification (Poisson-PSID)”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).

- A3. Sani O. G., Pesaran B., **Shanechi M. M.**[†], “Nonlinear modeling of behaviorally relevant neural dynamics using recurrent neural networks”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).
- A4. Vahidi P., Sani O. G., **Shanechi M. M.**[†] “Dissociating intrinsic and input-driven neural dynamics underlying behavior”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).
- A5. Hsieh H., Abbaspourazad H., Pesaran B., **Shanechi M. M.**[†], “Intrinsic and nonlinear geometric dynamical modeling of neural population activity”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).
- A6. Sadras N., Sani O. G., Valeriani D., Cinel C., Poli R., **Shanechi M. M.**[†], “Decoding confidence from pre-response EEG enables an augmentative brain-computer interface”, Annual Meeting, *Society for Neuroscience (SFN)*, Nov. 2021, Chicago, IL (*upcoming*).
- A7. Abbaspourazad H., Wong Y., Pesaran B., **Shanechi M. M.**[†], “Dynamical characteristics of simultaneously-recorded spike and LFP activities underlying 3D reach-to-grasp,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A8. Hsieh H.-L., Pesaran B., **Shanechi M. M.**[†], “The topology and geometry of motor cortical dynamics underlying 3D movements,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A9. Ahmadipour P., Yang Y., **Shanechi M. M.**[†], “Adaptive modeling of neural network dynamics with optimized learning rate,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A10. Sadras N., Pesaran B., **Shanechi M. M.**[†], “Estimating event times from spike trains with a point process matched filter,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A11. Sani O. G., Pesaran B., **Shanechi M. M.**[†], “A new preferential subspace identification (PSID) algorithm for learning dynamic neural encoding models with behavior-related latent states,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A12. Song C. Y., Hsieh H.-L., **Shanechi M. M.**[†], “Decoder for switching state space models with spike-field observations,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A13. Wang C., Pesaran B., **Shanechi M. M.**[†], “Multiscale spike-field network causality identification during a motor task,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A14. Yang Y., Qiao S., Pesaran B., **Shanechi M. M.**[†], “Accurate prediction of large-scale LFP network dynamics in response to electrical stimulation,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.
- A15. Nair R. M., Sani O. G., Sadras N., Song C., Ahmadipouranari P., Valeriani D., Cinel C., Citi L., Poli R., **Shanechi M. M.**[†], “Decoding human confidence from neural signals,” Annual Meeting, *Society for Neuroscience (SFN)*, 19–23 Oct. 2019, Chicago, IL.

- A16. Wang C., **Shanechi M. M.**[†], “Learning causal graphs in spike-field multiscale network encoding models”, Annual Meeting, *Society for Neuroscience (SFN)*, 3–7 Nov. 2018, San Diego, CA.
- A17. Sani O. G., **Shanechi M. M.**[†], “Learning dynamic neural encoding models with behaviorally-relevant latent states”, Annual Meeting, *Society for Neuroscience (SFN)*, 3–7 Nov. 2018, San Diego, CA.
- A18. Yang Y., Guidera J., Vlasov K., Pei J., Brown E.N., Solt K., **Shanechi M. M.**[†], “A personalized closed-loop system for control of EEG under medically-induced coma”, Annual Meeting, *Society for Neuroscience (SFN)*, 3–7 Nov. 2018, San Diego, CA.
- A19. Bighamian R. Wong Y.T., Pesaran B., **Shanechi M. M.**[†], “Modeling functional dependencies in high-dimensional spike-field activity”, Annual Meeting, *Society for Neuroscience (SFN)*, 3–7 Nov. 2018, San Diego, CA.
- A20. Abbaspourazad H., Wong Y.T., Pesaran B., **Shanechi M. M.**[†], “Identifying multiscale hidden neural dynamics to decode movement”, Annual Meeting, *Society for Neuroscience (SFN)*, 3–7 Nov. 2018, San Diego, CA.
- A21. Hsieh, H., Wong Y.T., Pesaran B., **Shanechi M. M.**[†], “Multiscale decoding of spike-field activity to improve brain-machine interface robustness and longevity”, Annual Meeting, *Society for Neuroscience (SFN)*, 11–15 Nov. 2017, Washington, DC.
- A22. Abbaspourazad H., **Shanechi M. M.**[†], “Learning the dependencies between spikes and fields in multiscale modeling”, Annual Meeting, *Society for Neuroscience (SFN)*, 11–15 Nov. 2017, Washington, DC.
- A23. Sani O., Yang Y., Chang E. F.[†], **Shanechi M. M.**[†], “Real-time decoding of mood from human large-scale ECoG activity”, Annual Meeting, *Society for Neuroscience (SFN)*, 11–15 Nov. 2017, Washington, DC.
- A24. Hsieh, H., **Shanechi M. M.**[†], “Adaptive multiscale brain-machine interface decoders”, Annual Meeting, *Society for Neuroscience (SFN)*, 12–16 Nov. 2016, San Diego, CA
- A25. Abbaspourazad H., **Shanechi M. M.**[†], “A new modeling framework for multiscale neural activity underlying behavior”, Annual Meeting, *Society for Neuroscience (SFN)*, 12–16 Nov. 2016, San Diego, CA.
- A26. Yang Y., Chang E. F., **Shanechi M. M.**[†], “Adaptive identification of high-dimensional brain network dynamics to track non-stationarity and plasticity”, Annual Meeting, *Society for Neuroscience (SFN)*, 12–16 Nov. 2016, San Diego, CA.
- A27. Hsieh, H., **Shanechi M. M.**[†], “A general framework for optimal selection of the learning rate in closed-loop brain-machine interfaces”, Annual Meeting, *Society for Neuroscience (SFN)*, 17–21 Oct. 2015, Chicago.
- A28. Yang Y., Connolly A., **Shanechi M. M.**[†], “A novel binary noise modulated electrical stimulation pattern for identification of brain network dynamics”, Annual Meeting, *Society for Neuroscience (SFN)*, 17–21 Oct. 2015, Chicago, IL.

- A29. **Shanechi M. M.**^{*†}, Orsborn A.L.^{*}, Moorman H.^{*}, Gowda S.^{*}, Dangi S, Carmena J.M.[†], “Rapid sensorimotor control and feedback rates enhance neuroprosthetic control”, *Cell Symposia: Engineering the Brain*, 15–16 Oct. 2015, Chicago, IL.
- A30. **Yang Y.**, **Shanechi M. M.**[†], “An adaptive and robust brain-machine interface architecture for closed-loop control of anesthesia”, *International Anesthesia Research Society (IARS) Annual Meeting*, 21–24 Mar. 2015, Honolulu, HI.
- A31. **Shanechi M. M.**^{*†}, Orsborn A.L.^{*}, Moorman H.^{*}, Gowda S.^{*}, Dangi S, Carmena J.M.[†], “Spike-by-spike control using an adaptive optimal feedback-controlled point process decoder improves BMI performance”, Annual Meeting, *Society for Neuroscience (SFN)*, 15–19 Nov. 2014, Washington, DC.
- A32. **Shanechi M. M.**, Chemali J., Liberman M., Solt K., Brown E. N., “Control of burst-suppression in a rodent model of medical coma using a brain-machine interface”, *International Anesthesia Research Society (IARS) Annual Meeting*, 17–20 May 2014, Montreal, Canada.
- Best of category award
- A33. **Shanechi M. M.**, Chemali J., Liberman M., Solt K., Brown E. N., “A brain-machine interface for control of medically-induced coma”, 43rd Annual Meeting, *Society for Neuroscience (SFN)*, 9–13 Nov. 2013, San Diego, CA.
- A34. **Shanechi M. M.**, Hu R., Powers M., Wornell G. W., Brown E. N., Williams Z. M., “A real-time concurrent brain-machine interface for performing sequential movements”, 41st Annual Meeting, *Society for Neuroscience (SFN)*, 12–16 Nov. 2011, Washington, DC.
- A35. **Shanechi M. M.**, Williams Z. M., Wornell G. W., Brown E. N., “Combining plan and peri-movement activities improves the performance of brain-machine interfaces”, 40th Annual Meeting, *Society for Neuroscience (SFN)*, 13–17 Nov. 2010, San Diego.
- A36. **Shanechi M. M.**, Williams Z. M., Wornell G. W., Brown E. N.: “A real-time brain-machine interface combining plan and peri-movement activities”, *Research in Encoding And Decoding of Neural Ensembles Conference (AREADNE)*, 17–20 Jun. 2010, Greece.

INVITED TALKS

- T1. Distinguished Speaker Seminar Series, Oxford Women in Computer Science Society, University of Oxford (*upcoming*)
- T2. Center for Theoretical Neuroscience, Columbia University, New York, NY, April 18, 2022 (*upcoming*)
- T3. Asilomar 2021 special session on “Signal Processing for Electrophysiology”, Oct. 31 – Nov. 3, 2021 (*upcoming*).
- T4. Department of Mathematics and Statistics, Boston University, Boston, MA, Oct. 28, 2021 (*upcoming*).

- T5. Plenary talk, International BCI meeting, June 7, 2021.
- T6. International BCI meeting workshop on BCIs for human enhancement, June 7, 2021.
- T7. O'Donnell Brain Institute Seminar, UT Southwestern, June 1, 2021.
- T8. American Control Conference Workshop on Neurodynamics, May 24, 2021.
- T9. McGill Seminar Series in Quantitative Life Sciences and Medicine, McGill University, May 11, 2021.
- T10. IEEE Neural Engineering Conference Mini-Symposium on Brain Stimulation, May 4, 2021.
- T11. Biomedical Engineering Seminar Series, University of North Carolina at Chapel Hill, April 23, 2021.
- T12. Nature portfolio conference "At the interface of brain and machine", April 20, 2021.
- T13. Plenary talk, Annual Minnesota Neuromodulation Symposium, April 16, 2021.
- T14. Neuroengineering Seminar, Baylor College of Medicine and Rice University, April 15, 2021
- T15. Electrophysiology of Brain Dynamics Speaker Series, University of California, Los Angeles, March 12, 2021.
- T16. Plenary talk, IEEE EMBS Grand Challenge Forum: BRAIN and Neural Systems, Feb. 13, 2021.
- T17. Keynote, Machine Learning in Science & Engineering, Columbia University, Dec. 15, 2020.
- T18. Brain Initiative 2020: Progress and Promise for Next-Generation Therapeutics, Annual Meeting of the American College of Neuropsychopharmacology, Dec. 8, 2020.
- T19. Neurotech Seminar Series, University of California, Los Angeles, Dec. 2, 2020.
- T20. Cellular Neurophysiology and Computation Guest Lecture, MIT EECS, Dec. 2, 2020.
- T21. Neural Engineering Seminar, University of Washington, Nov. 20, 2020.
- T22. Allen Institute Planning Workshop, Nov. 17, 2020.
- T23. Department of Biomedical Engineering, The City College of New York, Sep. 2, 2020.
- T24. Workshop on Methods of Information Theory in Computational Neuroscience, Annual Computational Neuroscience Meeting, July 22, 2020.
- T25. Neuromatch Academy Lecture, July 20, 2020.
- T26. IEEE EMBC workshop on brain-machine interfaces to machine-brain interfaces, July 17, 2020.
- T27. Department of Biomedical Engineering, Brown University, Providence, RI, May 20, 2020.

- T28. Neural Signal Processing Seminar, Department of Brain and Cognitive Sciences, MIT, Cambridge, MA, Apr. 1, 2020.
- T29. COSYNE 2020 workshop on interpretable computational neuroscience, Breckenridge, CO, Mar. 3, 2020.
- T30. Department of Biomedical Engineering, Duke University, Durham, NC, Feb. 20, 2020.
- T31. Information Theory and Applications (ITA) Workshop, San Diego, CA, Feb. 7, 2020.
- T32. Plenary talk, IEEE EMBS Workshop on Brain, Mind, and Body, San Diego, CA, Dec. 19, 2019.
- T33. Gatsby Computational Neuroscience, University College London, London, UK, Dec. 5, 2019.
- T34. The NIMH Director's Innovation Speaker Series, Bethesda, MD, Nov. 21, 2019.
- T35. Neuro Seminar Series, Georgia Institute of Technology, Atlanta, GA, Nov. 11, 2019.
- T36. ECE seminar series, Illinois Institute of Technology, Chicago, IL, Oct. 24, 2019.
- T37. Society for Neuroscience (SfN) mini-symposium "Timing is everything", Chicago, IL, Oct. 23, 2019
- T38. Society for Neuroscience (SfN) short course on neural prosthetics and brain-machine interfaces, Chicago, IL, Oct. 18, 2019.
- T39. 2019 Joint Meeting of Neuromodulation: The Science / NYC Neuromodulation, Napa, CA, Oct. 4, 2019.
- T40. Department of Neurobiology and Behavior, Stony Brook University, Stony Brook, NY, Sep. 5, 2019.
- T41. Machine Learning in Science and Engineering, Georgia Institute of Technology, Atlanta, Georgia, June 11, 2019.
- T42. Carolina Neurostimulation Conference, University of North Carolina, Chapel Hill, NC, June 5, 2019.
- T43. Center for Theoretical Neuroscience, Columbia University, New York, NY, May 3, 2019.
- T44. Department of Bioengineering, UC Riverside, Riverside, CA, Apr. 3, 2019.
- T45. Plenary session, International IEEE EMBS Conference on Neural Engineering, San Francisco, CA, Mar. 22, 2019.
- T46. Society of Brain Mapping & Therapeutics (SBMT) Annual Congress, Los Angeles, CA, Mar. 15, 2019.
- T47. Information Theory and Applications (ITA) Workshop, San Diego, CA, Feb. 15, 2019.
- T48. Neural Computation and Engineering Connection, University of Washington, Seattle, WA, Jan. 25, 2019.

- T49. Information Sciences Institute, Los Angeles, CA, Nov. 9, 2018.
- T50. NSF/BU Workshop on Integrating Neurophotonics, Statistical Physics, and Control Theory for Advancing Neuroscience, Alexandria, VA, Oct. 22, 2018.
- T51. NIH BRAIN Initiative Workshop, Harvard University, Cambridge, MA, Aug. 24, 2018.
- T52. IEEE EMBC workshop on progress in bi-directional neural interfaces for adaptive neurostimulation and neuromodulation, Honolulu, HI, July 17, 2018.
- T53. Simon Institute Workshop on Targeted Discovery in Brain Data, UC Berkeley, Mar. 19, 2018.
- T54. COSYNE 2018 workshop on closed-loop control of neural systems, Breckenridge, CO, Mar. 6, 2018.
- T55. COSYNE 2018 workshop on neuroengineering, Breckenridge, CO, Mar. 5, 2018.
- T56. Data Science Institute, Imperial College London, UK, Feb. 23, 2018.
- T57. Kavli Frontiers of Science Symposium, National Academy of Sciences, Irvine, CA, Feb. 16, 2018.
- T58. IEEE Brain Workshop on Advanced NeuroTechnologies for BRAIN Initiatives, Washington, DC, Nov. 10, 2017.
- T59. Keynote speaker, Department of Biomedical Engineering, Boston University, Boston, MA, Oct. 4, 2017.
- T60. International IEEE EMBS Conference on Neural Engineering, Workshop on Advanced NeuroTechnologies for BRAIN Initiatives, Shanghai, China, May 25, 2017.
- T61. EE Seminar Series, UCLA, Los Angeles, CA, Apr. 10, 2017.
- T62. Plenary speaker, 7th Advanced Institute on Global Healthcare Research and Education, Harvard University, Cambridge, MA, Mar. 25, 2017.
- T63. California ALS Summit, Los Angeles, CA, Jan. 14, 2017.
- T64. Plenary speaker, IEEE Workshop on Advanced NeuroTechnologies for BRAIN Initiatives, San Diego, CA, Nov. 11, 2016.
- T65. Air Force Research Laboratory, Dayton, Ohio, Aug. 15, 2016.
- T66. Brain-Computer Interface Meeting, Asilomar, CA, Jun. 2, 2016.
- T67. Engineering Science Conference, University of Toronto, Toronto, Canada, Jan. 15, 2016.
- T68. Electrical Engineering Seminar Series, Harvard University, Cambridge, MA, Nov. 13, 2015.
- T69. Communication Theory Seminar, UC San Diego, San Diego, CA, Oct. 30, 2015.
- T70. Information Sciences Institute (ISI), USC, Los Angeles, CA, Jun. 19, 2015.
- T71. Children's Hospital Los Angeles (CHLA), Los Angeles, CA, Jun. 5, 2015.

- T72. Session Talk, Society for Neural Control of Movement (NCM), Charleston, SC, Apr. 24, 2015.
- T73. Neurorehabilitation Seminar, Division of Biokinesiology, USC, Los Angeles, CA, Apr. 10, 2015.
- T74. AI/ML Seminar, School of Information and Computer Sciences, UC Irvine, Irvine, CA, Apr. 6, 2015.
- T75. Colloquium Series, Department of EECS, UC Riverside, Riverside, CA, Oct. 27, 2014.
- T76. Google Solve for X, Cambridge, MA, Sep. 21, 2014.
- T77. MIT EmTech Conference, Cambridge, MA, Sep. 20, 2014.
- T78. Plenary Talk, IEEE EMBS Workshop on Advanced NeuroTechnologies for BRAIN Initiatives (ANTBI), Chicago, IL, Aug. 26, 2014.
- T79. Department of Electrical Engineering, USC, Los Angeles, CA, May 12, 2014.
- T80. Center for Neural Sciences, New York University, New York, NY, Mar. 8, 2014.
- T81. Department of Brain and Cognitive Sciences, MIT, Cambridge, MA, Mar. 5, 2014.
- T82. Department of Electrical Engineering, UCLA, Los Angeles, CA, Feb. 26, 2014.
- T83. Colloquium Series, Department of Electrical Engineering and Computer Sciences, UC Berkeley, Berkeley, CA, Jan. 21, 2014.
- T84. Control Theory Seminars, Department of Electrical Engineering and Computer Sciences, UC Berkeley, Berkeley, CA, Nov. 25, 2013.
- T85. Neural Signal Processing Seminar, Department of Brain and Cognitive Sciences, MIT, Cambridge, MA, Mar. 11, 2013.
- T86. Department of Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA, Aug. 23, 2012.
- T87. School of Electrical and Computer Engineering, Cornell University, Ithaca, NY, Apr. 19, 2012.
- T88. Department of Electrical and Computer Engineering, Rice University, Houston, TX, Mar. 14, 2012.
- T89. Division of Biology, California Institute of Technology, Pasadena, CA, Jan. 9, 2012.
- T90. Department of Electrical Engineering, USC, Los Angeles, CA, Dec. 1, 2011.
- T91. Department of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, Nov. 28, 2011.
- T92. IEEE EMBC conference, Boston, MA, Sep. 1, 2011.
- T93. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, Jun. 8, 2011.

T94. Information theory and applications (ITA) lecture series, UC San Diego, San Diego, CA, Aug. 26, 2008.

SELECTED MEDIA COVERAGE

The Wall Street Journal
New Scientist
BBC News
Le Monde
Nature
Le Scienze
NBC
CBS
Discovery News
MIT Technology Review
Popular Science
USC News
Cornell Chronicle
MIT News
NPR
Science News
IEEE Spectrum

TEACHING

- EE599: Signal Processing and Control in Neural Systems, Spring 2016, Fall 2017
- EE599: Data Analysis and Control Techniques for Neurotechnology Design, Fall 2018 (has now been converted to permanent course EE675)
- EE563: Estimation Theory, Spring 2015, Fall 2015, Spring 2017, Spring 2018, Spring 2020, Spring 2021
- EE503: Probability for Electrical and Computer Engineers, Fall 2020

STUDENTS AND POSTDOCTORAL SCHOLARS

PhD Students:

1. Yuxiao Yang: September 2014 – August 2019 (graduated)
Currently: Assistant Professor in Electrical and Computer Engineering, University of Central Florida
2. Omid G. Sani: September 2015 – August 2020 (graduated)
Currently: Postdoc, USC Electrical and Computer Engineering, Shanechi Lab
2021 Best Doctoral Dissertation Award at USC Viterbi School of Engineering
3. Han-Lin Hsieh: September 2014 – present
4. Hamidreza Abbaspourazad: September 2015 – present
5. Chuanmeizhi Wang: September 2015 – present
6. Nitin Sadras: September 2016 – present
7. Christian Song: September 2017 – present
8. Parima Ahmadipouranari: September 2017 – present

9. Dongkyu Kim: September 2019 – present
10. Parsa Vahidi: September 2019 – present
11. Yanyu Li: September 2019 – present
12. Mustafa Avcu: September 2019 – present
13. Trisha Jani: September 2020 – present
14. Lucine Oganessian: September 2020 – present
15. Eray Erturk: September 2020 – present
16. Yusuf Ciftci: September 2021 – present
17. Alireza Ziabari: September 2021 – present
18. Haoyan Xu: September 2021 – present

Postdoctoral Scholars:

1. Allison Connolly (PhD, Biomedical Engineering, University of Minnesota): January 2015 – November 2015
Currently: Staff scientist at St. Jude’s Medical Devices
2. Ramin Bighamian (PhD, Mechanical Engineering, University of Maryland): June 2017 – December 2018
Currently: Assistant Professor in Mechanical Engineering, George Mason University
3. Yuxiao Yang (PhD, Electrical and Computer Engineering, USC): September 2019 – July 2020
Currently: Assistant Professor in Electrical and Computer Engineering, University of Central Florida
4. Christoph Schneider (PhD, Neuroscience, EPFL): October 2019 – December 2020
5. Omid G. Sani (PhD, Electrical and Computer Engineering, USC): October 2020 – present

UNIVERSITY SERVICE

University Level:

- **Faculty Steering Committee of Keck School of Medicine + USC Viterbi School of Engineering**, 2019 – present: charged with exploring the expansion of collaborations between Faculty in both schools
- **USC STEVENS Technology Transfer Office faculty advisory board**, Aug. 2017 – Aug. 2020
- **USC Board of Trustee Faculty Speaker**
 - Presented at the 2018 USC Board of Trustees Retreat
 - Presented at the 2015 Academic Affairs Committee of the USC Board of Trustees meeting

Viterbi School of Engineering Level:

- **USC Viterbi Research Committee**, Aug. 2018 – present
- **USC Viterbi Awards Committee**, 2020
- **Viterbi School of Engineering Board of Councilors Faculty Speaker**, 2015, 2018
- **USC-IME cultural mentorship and summer program for undergraduate students**, 2017

Department Level:

- **Electrical and Computer Engineering Faculty Search Committee**, 2017-18, 2019-20, 2020-21
- **PhD Screening exam coordinator and/or examiner for Signal Processing**, 2015 – present
- **MHI Scholar Selection Committee**, 2018
- **Electrical Engineering Advisory Board Faculty Speaker**
- **PhD qualifying and thesis committees**: 9 students in other labs + students in my lab
- **PhD admissions reviewer**: Regularly reviewed PhD applications, scored, and interviewed candidates

PROFESSIONAL SERVICE

Conferences / Workshops / Panels:

- **International IEEE NER conference mini-symposium organizer/chair**, 2021
- **NIH panel for NIMH invasive Recording and Stimulating Review**, 2020, 2021
- **Neuromodulation: The Science 2021 meeting session organizer and chair**
- **NIH panel for BRAIN initiative grants**, 2020
- **Society for Neuroscience (SFN) scientific short course developer and presenter**, 2019: Developed a short course lecture and notes and taught it at SFN 2019 in Chicago
- **NSF Engineering Research Center (ERC) site visit team**, 2019: Review visit to the center for neural engineering at the University of Washington
- **NIH BRAIN Initiative Workshop Speaker**, 2018
- **National Academy of Sciences (NAS) Session Proposal, Invited Speaker, and Chair** for the 2018 Kavli Frontiers of Science Symposium, Session on “Brain-machine interfaces”
- **IEEE Brain Think Tank**, 2018. Participated in devising a technology roadmap for future neural therapeutics, leading to a white paper available at <https://brain.ieee.org/publications/future-neural-therapeutics-closed-loop-control-of-neural-activity/>
- **IEEE BRAIN Podcast Series, 2018**. I contributed a two-part podcast to the IEEE BRAIN initiative discussing BMIs. The podcast is available to the public.
Part 1: <http://ieeetv.ieee.org/technology/q-a-with-dr-maryam-shanechi-ieee-brain-podcast-episode-6-part-1>
Part 2: <http://ieeetv.ieee.org/technology/q-a-with-dr-maryam-shanechi-ieee-brain-podcast-episode-6-part-2>
- **National Academy of Engineering (NAE) Organizing Committee**, 2017 Frontiers of Engineering Symposium (FOE)

- **National Academy of Engineering (NAE) Invited Session Co-Chair**, 2017 FOE session on “Unraveling the complexity of the brain”
- **NSF panel** on Collaborative Research in Computational Neuroscience (CRCNS), 2017
- **NIH/UCSF panel participant** on Convergent Neuroscience, 2016
- **NSF/Computing Community Consortium BRAIN Workshop participant**, 2014
- **Chair/co-chair** for IEEE International Engineering in Medicine and Biology Society Conferences (EMBC), 2014 – present

Journal editor/reviewer:

- **Area Editor for Encyclopedia BRAIN:** BMI area editor for a new resource for the neuroengineering and neuroscience communities that will be published by Wiley-IEEE Press and is co-sponsored by the IEEE Brain Initiative.
- **Journal Reviewer**
 - Nature
 - Nature Biotechnology
 - Nature Neuroscience
 - Nature Biomedical Engineering
 - Nature Communications
 - Science Translational Medicine
 - Journal of Neural Engineering
 - PLoS Computational Biology
 - IEEE Transactions on Neural Systems and Rehabilitation Engineering
 - IEEE Transactions on Biomedical Engineering
 - Journal of Neuroscience
 - Frontiers Computational Neuroscience
 - Journal of Computational Neuroscience
 - Proceedings of the IEEE
 - Neural Computation
 - Journal of Neurophysiology
 - PNAS
 - eLife

Grant Reviewer:

- NSF CISE
- NSF/NIH CRCNS
- NIH (NIMH)

Memberships:

- Institute of Electrical and Electronics Engineers (IEEE)
- Society for Neuroscience (SFN)
- IEEE Engineering in Medicine and Biology Society
- Women in Science and Engineering (WiSE)